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1986 Fact Book of U.S. Agriculture

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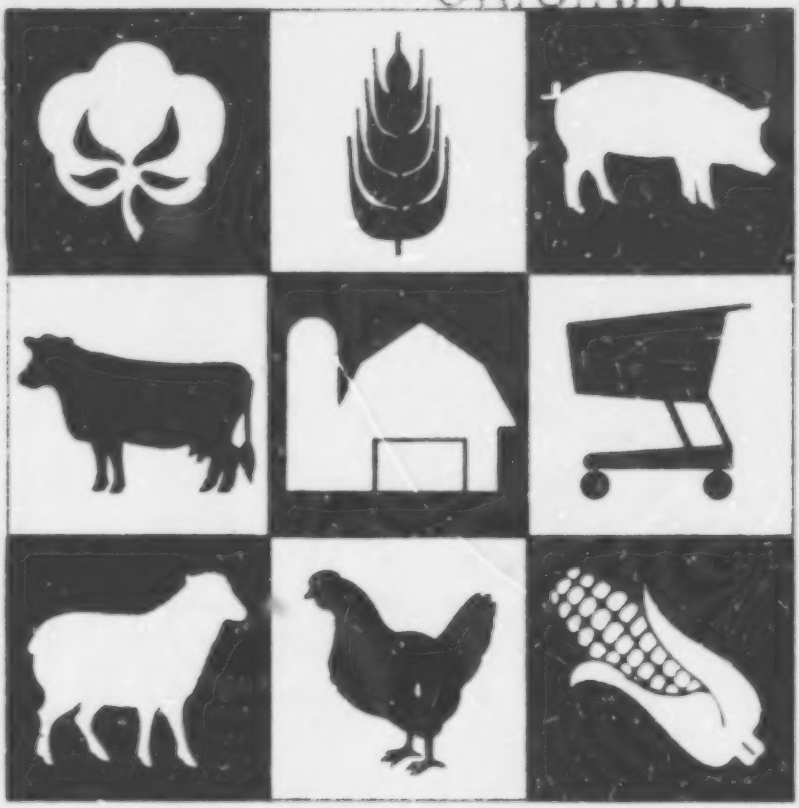

United States Department of Agriculture

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FACT BOOK OF U.S. AGRICULTURE

Compiled from Department Sources by the Office of Information

Miscellaneous Publication No. 1063
United States Department of Agriculture

Revised November 1985

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PREFACE

The contents of the Fact Book of U.S. Agriculture are organized to reflect the structure of modern agriculture. The major subdivisions are:

I. Farm Production, Income, and Values deals with farm production goods; the industries and service organizations that produce the goods and services that farmers buy to produce food and fiber; and farm income, and values.

II. The Farming Operation covers the farm business itself which combines land, labor, management, and capital to produce farm products.

III. Food Marketing describes the system of transportation, processing, and merchandising—including consumer education, advertising, and other elements of marketing—that converts farm products into consumer products ready for use in homes, restaurants, and institutions here and overseas.

IV. Agricultural Services deals with activities of the U.S. Department of Agriculture and other government and private agencies that support modern agriculture—research, inspection, Extension, statistics, forest management, regulatory activities, grading services, credit, and income support.

V. The Rural Social Environment pertains to the population, environment, and social problems of smaller towns and the open country.

The Fact Book of U.S. Agriculture is intended as a handy source of the main trends in agriculture for reporters, editorial writers, farm organization leaders, agribusiness managers, and others who speak and write about agriculture.

More detailed tabulations and charts will be found in Agricultural Statistics and the Handbook of Agricultural Charts. Both are revised annually and are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Other selected references are listed on page 120.

The Fact Book of U.S. Agriculture is a publication of the Office of Governmental and Public Affairs, U.S. Department of Agriculture, Washington, D.C. 20250.

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INTRODUCTION

THE NATION'S AGRICULTURAL INDUSTRY

Agriculture is the Nation's biggest industry. Farm assets, totaling $968 billion on December 31, 1984.

Agriculture is also the Nation's largest employer. Around 21.0 million people work in some phase of agriculture—from growing food and fiber to selling it at the supermarket. Farming itself uses 2.7 million workers—as many as the combined work forces of transportation, the steel industry, and the automobile industry. The Nation's food and fiber system accounted for 16 percent of total GNP in 1984.

The Nation's agricultural production is conducted by 2.28 million farms. Recent tabulations show that in 1983:

- 1,433,000 farms (60.5 percent of all farms) sold less than $20,000 worth of farm products per farm.
- 272,000 (11.5 percent) sold farm products worth $20,000 to $40,000.
- 381,000 (16.1 percent) sold farm products worth $40,000 to $100,000.
- 284,000 (12.0 percent) sold farm products worth more than $100,000. Of these farms, 177,000 had sales totaling $100,000 to $200,000; 83,000 had sales of $200,000 to $500,000; and 24,000 had sales of $500,000 and over.

Agriculture requires the services of about 18.3 million people to store, transport, process, and merchandise the output of the Nation's farms.

Here are a few examples of where these people work:

- Meat and poultry industry, including meatpacking, prepared meats, and poultry dressing plants, employs about 367,000 people and has a payroll of $4.5 billion.
- Dairy industry, including manufacturers of such products as fluid milk, concentrated and dried milk, cheese, butter, and ice cream, employs nearly 182,000 people and has a payroll of $1.8 billion.
- Baking industry, including plants for making bread, biscuits, and crackers, employs over 212,000 people and has a payroll of $2.1 billion.
- Canned, cured, and frozen food plants employ nearly 271,000 people and have payrolls of $2.8 billion.
- Cotton mills and finishing plants employ nearly 143,000 people and have payrolls of $1.6 billion.

That adds up to approximately one out of every five jobs in private enterprise.

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AGRICULTURE GETS FOOD TO YOU WHERE YOU WANT IT

The American farmer is linked to you by a complex food marketing system.

Last year consumers spent $332 billion for U.S. farm-produced foods. About $243 billion of that was to get the food from the farm to your table. The food was assembled, inspected, graded, stored, processed, packaged, wholesaled, and retailed—more than 300 million tons of it. To reach you, this food traveled across 173,800 miles of railroads, 3.4 million miles of highways, and 26,000 miles of improved waterways.

The foods that poured into your supermarket came in 10,000 to 15,000 different products—many of which did not even exist 5 years ago and may very well not exist 5 years from now. That's because Americans are attracted to newer foods with more built-in conveniences—as well as to food in attractive packages that preserve the quality. Packaging and transportation cost $43 billion last year—and might well have been considerably more except for vigorous competition among truckers and railroads, and recent innovations in packaging and handling methods. The food marketing system has developed a computerized checkout, and is working on an inventory, and ordering system that might further streamline food retailing and help to simplify shopping.

FARMERS ARE EFFICIENT PRODUCERS

American farmers today produce over 80 percent more crop output on an acre of land than did their fathers. Today, 1 hour of farm labor produces 16 times as much food and other crops as it did in the 1919–21 period.

One farmworker now supplies enough food and fiber for 79 people. Only 10 years ago, the farmworker was producing enough for 59. Because of the farmer's efficient output, we can enjoy a satisfying quantity and variety of food.

In 1984, for example, Americans consumed an average of 144 pounds* of beef, veal, pork, lamb, and mutton; 68 pounds of chicken and turkey; 88 pounds of fresh fruits; 75 pounds of fresh vegetables; 308 pounds of dairy products; and 73 pounds of potatoes.

Farmers produce not only enough for us, but also enough to make large quantities of farm products available for international trade.

We export more farm products than anyone else in the world.

In 1984, production from one-third (111 million acres) of America's cropland went overseas.

Until recently, farm exports had set successive records, reaching a peak of $43.8 billion in fiscal year 1981. Because of lower prices and

*Retail weight.

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reduced foreign demand, however, exports in fiscal year 1984 totaled $38 billion, and were declining further in 1985.

Even so, farm exports still contributed a net of $19.1 billion to our balance of trade in 1984, which is another way of saying we got over twice as much for our food and fiber exports as we paid out for food and fiber imports.

RISING AGRICULTURAL PRODUCTIVITY

Total agricultural production is more than 2½ times the levels of 1930, even though the agricultural resource base has not substantially changed. The growth in farm output has come from the higher productivity of agricultural resources rather than from greater input use. The aggregate number of breeding animals, and the total inputs to agriculture in 1930 differ by less than 5 percent from the amounts used in 1984. Yet, crop production is nearly 2.5 times the 1930 level, livestock production 2.1 times the 1930 level, and total farm output about 2.6 times the 1930 level. This implies that the productivity of land is 2½ times the productivity in 1930, that breeding animals are twice as productive as in 1930, and that overall, the farm sector is 2.5 times as productive as in 1930.

The new technology which made these gains possible changed the mix of other inputs used. Fertilizer consumption is 15 times 1930 levels, feed concentrates 2.3 times 1930 levels, tractor horsepower 12 times 1930 levels, and tractor numbers 5 times the 1930 number. On balance, purchased inputs in 1983 are 2.3 times those of 1930, while the farm labor input is only 18 percent of farm employment in 1930. As a result, farms have expanded in size and become more dependent on capital and purchases from the nonfarm economy.

If the trends of the last 15 or so years continue, total farm output per unit of input should grow at about 2 percent per year; crop production per acre should increase about 2 percent per year; and the production per breeding unit should increase about 1 percent per year. Significant changes in the prices of farm inputs relative to farm commodity prices, or changes in the mix of commodities produced, will affect the actual trends that occur.

FARMERS ARE CONSUMERS AS WELL AS PRODUCERS

Like everyone else, the American farmer is a consumer and a taxpayer, as well as a producer.

Farmers pay about $4.4 billion in farm real estate taxes annually, and $500 million in personal property taxes.

In 1984, farm operators spent about $139 billion for goods and services to produce crops and livestock. They had available $34.6 billion in personal income from farm sources and $40.0 billion from

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nonfarm sources to spend for personal taxes, investments, and for the same things that city people buy.

Farmers' 1984 purchases included:

- $9.5 billion for farm tractors and other motor vehicles, machinery, and equipment. About 150,000 employees are required to produce this farm equipment.
- $13.6 billion for fuel, lubricants, and maintenance for machinery and motor vehicles used in the farm business. Farming uses more petroleum than any other single industry.
- $24.0 billion for feed and seed.
- $8.9 billion for fertilizer and lime.
- Products containing 360 million pounds of rubber—about 5 percent of the total used in the United States, or enough to put tires on nearly 7 million automobiles.
- 33 billion kilowatt-hours of electricity—about 2 percent of the Nation's total. That's more than the annual residential use in all New England States plus Maryland, Kentucky, and Washington, D.C.
- 6½ million tons of steel in the form of farm machinery, trucks, cars, fencing, and building materials. Farm use of steel accounts for 40,000 jobs in the steel industry.

Like everyone else, farmers feel the pinch of inflation. In the last 10 years, wage rates for farmworkers have gone up 90 percent, tractors and self-propelled machinery cost 188 percent more, taxes are up 63 percent, and feeder livestock prices are up 66 percent. Overall, the average cost of commodities, services, interest, taxes, and farm wage rates has climbed 102 percent in the last 10 years. These sharp increases in the average include the much lower rates of inflation experienced in the past few years.

YOU GET MORE FOOD FOR YOUR MONEY

Not only have food prices risen comparatively little in the past few years, family income buys considerably more food today partly because agriculture has become much more efficient and partly because consumer incomes have risen faster than food prices. For example, here's what the average U.S. worker could buy with an hour's pay in 1960 and in 1984:

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Food item	1980	1984
White bread	10.1 lbs.	15.4 lbs.
Frying chickens	2.5 lbs.	10.3 lbs.
Milk	8.0 qts.	14.8 qts.
Potatoes, fresh	32.7 lbs.	34.4 lbs.
Eggs	2.4 doz.	8.3 doz.
Pork	2.7 lbs.	5.1 lbs.

Our diets are more varied. We are eating 35 percent more poultry but 8 percent less beef per person than we did 10 years ago. We are eating more fresh vegetables (18 percent) and more fresh fruits (13 percent).

WHAT THE FARMER RECEIVES (1984 ANNUAL AVERAGE)

As gross payment from retail food prices:

- 34 cents per $1 spent in grocery stores for U.S. farm-grown food.
- 58 cents per $1 spent for choice beef.
- 66 cents for eggs selling for $1.02 cents per dozen at retail.
- 4.3 cents for the wheat in a 54-cent loaf of white bread.
- About 58 cents for a $1.13 half gallon of milk.

For their labor, capital, and management to the farm:

- $138.7 billion in gross sales of crops and livestock. Their net return for family resources was $34.6 billion.

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I. FARM PRODUCTION, INCOME, AND VALUES

1. INPUTS FOR AGRICULTURE

The three basic "inputs" for agricultural production are land, labor, and capital.

Land is no longer the major production tool. The productivity of the land now depends upon the skill and knowledge with which capital is applied—the use of mechanical power and machinery, fertilizer, lime, better seed, pest control chemicals, and the technology applied to conserve and enhance the land while in productive use.

The total volume of all resources used in agriculture—land, labor, machinery, and supplies—has changed little since 1955.

The composition of inputs, however, has changed drastically as farmers have struggled to be more productive and more efficient. Farm labor inputs have declined rapidly; farm real estate has remained relatively constant. All other inputs, chiefly purchased, have increased rapidly. Purchased inputs are about two-thirds greater than in 1955; nonpurchased inputs have declined over one-third.

2. LAND

Almost two-thirds (64 percent) of the 1.5-billion-acre non-Federal land area of the United States is used to produce crops and livestock. The rest of the non-Federal land is distributed among forest land (26 percent); urban, transportation, and other uses (9 percent); and small water areas.

Our cropland resources in 1982, according to the Soil Conservation Service's 1982 National Resources Inventory, consisted of 421 million acres, of which 376 million acres are cultivated for crops, 38 million acres are used for hay, and 7 million acres are in horticultural crops. About 56 percent of our cropland is prime farmland, which is the best land for producing food and fiber.

The Nation has 993 million acres of non-Federal rural land currently being used for pasture, range, forest, and other purposes. Only about 153 million of these acres are suitable for conversion to cropland if needed. Most of this land would require careful soil and water management if brought into intensive agricultural use, and doing so would diminish our supply of pasture, range, or forest land.

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Table 1.—U.S. land ownership and use in 1982

Data provided by Soil Conservation Service, U.S. Department of Agriculture

Type of land	Hectares (millions)	Acres (millions)	Percentage of total
Federal land	163	404	21
Non-Federal land	606	1,498	79
Total land area	769	1,902	100

Table 2.—Non-Federal use of land in the United States, excluding Alaska, in 1982

Data provided by Soil Conservation Service, U.S. Department of Agriculture

Major land use	Hectares (millions)	Acres (millions)	Percentage of total
Cropland	170	421	28
Pastureland	54	133	9
Rangeland	164	406	27
Forest land	159	394	26
Small water areas	4	10	1
Urban, built-up, and transportation areas less than 10 acres in size	20	74	5
Other land	24	60	4
Total land area	605	[illegible]	100

[1] Does not include 14 million acres of non-Federal land in Alaska.

3. WATER

Precipitation varies from nearly none in Death Valley desert in California to more than 200 inches per year in some areas—for example, the Olympic Mountains in Washington. The average for the 48 mainland States is 30 inches per year—a total of 1,570 trillion gallons. This total does not change a lot from year to year, but precipitation at any location may vary greatly.

Two-thirds of this water evaporates from wet surfaces or soaks into the soil to sustain crops, pastures, rangeland, and forests. The other third percolates deep into the ground or finds its way into streams. Water in the streams can be used for navigation, recreation, or power generation. Or it can be diverted from streams and, with water pumped from underground, used for irrigation, industry, and other purposes.

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In 1982, 48.0 million acres were irrigated in the 50 States, an increase of 10.0 million acres since 1969. Most of the acreage increase in irrigated land occurred in the 17 Western States and the Southeast. Irrigated acreage decreased significantly in the southern Plains, down 1.5 million acres (in Texas and Oklahoma) due to increased energy costs and lowering of the Ogallala aquifer.

Table 3.—Specified U.S. crops harvested by acres irrigated in 1982

Crop	Irrigated acreage [1] (1,000 acres)
Corn	9,337
Hay	8,496
Cotton	3,423
Land in orchards	3,342
Wheat	4,518
Rice	3,222
All vegetables harvested for sale	2,054
Sorghums for grain or seed	2,269
Barley	1,949
Soybeans	2,319
Irish potatoes	794
Sugar beets for sugar	545

[1] All farms.

Source: 1982 Census of Agriculture, Bureau of the Census, U.S. Department of Commerce.

Water withdrawn and then returned to streams may be used again as long as acceptable quality is maintained. Only water that is used up (mainly by evaporation) so that it does not return to streams reduces the total usable water supply. Agriculture uses 83 out of every 100 gallons that are consumed.

Management of water is becoming increasingly important as use approaches available supply. Shortages can occur in any region in any year. In some Western States, current use is already pressing heavily on available supplies. Cities and industries are using increasing amounts and thus intensifying supply and treatment problems. Water pollution is today a major conservation problem in most regions.

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Table 4.—Indexes of total farm input and major input subgroups, United States, 1820–63

(1977=100)

Year	Total inputs			Farm Labor [3]	Farm real estate [4]	Mechanical power and machinery [5]	Agricultural chemicals [6]	Feed, seed, and livestock purchases [7]	Taxes and interest [8]	Miscellaneous [9]
	All	Non-purchased [1]	Purchased [2]							
1820	95	198	37	485	105	27	5	23	62	65
1821	92	188	37	447	103	27	3	26	74	59
1822	93	191	38	463	104	26	4	25	72	60
1823	94	192	38	466	104	27	4	25	72	60
1824	96	194	40	471	104	27	5	31	71	62
1825	97	196	40	481	103	28	5	28	69	63
1826	98	196	42	482	103	29	5	29	71	65
1827	97	192	42	464	104	31	5	29	72	61
1828	99	195	43	472	105	32	6	29	73	62
1829	99	195	44	468	107	33	6	28	75	62
1830	99	195	43	463	104	34	6	27	76	60
1831	98	196	42	473	102	32	5	24	77	63
1832	95	191	39	457	100	30	4	25	80	61
1833	93	188	39	456	100	27	4	26	77	60
1834	87	172	38	409	100	27	5	25	70	55
1835	89	174	40	425	102	28	5	23	64	55
1836	91	172	43	413	102	29	6	31	69	54
1837	95	182	45	446	104	32	7	30	64	59
1838	93	175	45	416	104	33	7	31	70	55
1839	96	175	48	418	105	34	7	37	73	58
1840	97	175	50	417	107	36	9	39	74	57

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Table 4.—Indexes of total farm input and major input subgroups, United States, 1939-83—Continued

(1977=100)

Year	Total inputs			Farm Labor [5]	Farm real estate [6]	Mechanical power and machinery [8]	Agricultural chemicals [9]	Feed, seed, and livestock purchases [7]	Taxes and interest [8]	Miscellaneous [9]
	All	Nonpurchased [1]	Purchased [2]							
1941	97	174	51	410	105	37	9	42	74	57
1942	100	183	51	420	103	44	10	44	75	55
1943	102	184	52	414	102	47	11	46	78	57
1944	103	185	53	411	101	49	13	48	80	59
1945	100	178	53	395	102	50	13	50	82	58
1946	99	171	54	389	105	49	14	49	82	59
1947	99	167	56	350	106	54	15	51	82	60
1948	100	168	57	340	107	62	16	52	80	63
1949	102	169	60	328	108	68	18	56	83	66
1950	101	166	60	309	109	72	19	58	83	66
1951	104	169	63	309	109	77	21	62	84	66
1952	104	166	64	295	108	81	23	63	86	67
1953	103	164	64	284	108	82	24	63	87	67
1954	102	161	64	273	108	82	24	65	87	65
1955	102	158	65	263	108	83	26	65	88	66
1956	101	152	66	248	106	84	27	66	88	65
1957	98	145	66	231	105	83	27	66	88	66
1958	98	140	69	221	104	83	28	73	89	71
1959	99	136	72	215	105	84	32	77	94	75
1960	96	131	74	206	103	83	32	77	95	77
1961	97	128	74	198	103	80	35	81	96	76

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1956	97	125	76	169	104	
1957	97	121	78	163	104	
1958	97	119	80	173	104	
1959	96	113	80	158	103	
1960	96	111	83	146	102	
1961	96	110	86	142	104	
1962	97	109	86	137	102	
1963	97	108	87	132	102	
1964	97	107	88	128	105	
1965	96	105	91	123	103	
1966	97	103	92	116	102	
1967	96	103	89	114	100	
1968	96	103	93	111	99	
1969	96	102	90	107	97	
1970	99	100	97	103	99	
1971	100	100	100	103	100	
1972	101	100	104	98	100	
1973	105	99	111	99	101	
1974	103	99	107	92	101	
1975	102	97	107	90	101	
1976	100	95	104	87	101	
1977	95	91	99	79	100	

[1] Includes operator and unpaid family labor, and operator-owned real estate and other capital inputs. [2] Includes hired, operator, and unpaid family labor. [3] Includes all land in farms, service buildings. [4] Includes interest and depreciation on mechanical power and machinery repairs, fuel, purchases. [5] Includes nonfarm value of feed, seed, and livestock purchases. [6] Includes real estate, livestock and crop inventory. [7] Includes such things as insurance, telephone, veterinary fees,

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76	189	104	90	38	63	98	81
78	183	104	79	43	83	99	83
80	173	104	80	46	85	101	87
80	158	103	80	49	88	101	85
88	146	102	82	56	89	102	82
86	142	104	85	66	92	102	80
86	137	102	88	68	89	102	85
87	132	102	86	73	89	101	85
88	128	105	85	75	88	102	88
91	123	103	87	81	102	101	89
92	118	102	86	88	104	102	92
93	114	100	90	90	107	102	90
93	111	99	92	92	99	103	87
90	107	97	95	93	90	100	82
97	103	99	96	96	101	102	90
00	103	100	100	100	100	100	100
04	98	100	104	107	104	96	105
11	98	101	107	118	111	103	117
97	92	101	104	120	109	100	99
97	90	101	102	121	105	96	111
04	87	101	99	110	104	100	121
99	79	100	93	96	101	101	114

d real estate and other capital inputs. [2] Includes all inputs other than nonpurchased [3] Includes all land in farms, service buildings, grazing fees, and repairs on service power and machinery repairs, licenses, and fuel. [4] Includes fertilizer, lime, and ck purchases. [5] Includes real estate and personal property taxes, and interest on ces, telephone, veterinary fees, containers, and binding materials. [10] Preliminary.

The total supply of water will not increase. But more water may be made available for use by demineralization, storage in surface reservoirs, recharging underground aquifers of water-bearing rocks, converting brushland to grass in lower rainfall areas, and managing vegetative cover, including forests, so as to capture and retain more snowfall.

Water quality and quantity can be improved and energy use reduced by improving irrigation systems. Some present systems use less than half of the water they receive. An average water-use efficiency of 70 to 75 percent is an achievable goal.

4. FARM LABOR

Since the turn of the century, farm employment has decreased considerably, falling from 13.6 million in 1910 to 3.7 million in 1980. During the last decade, the number of family operators and unpaid family members continued to decline, while hired farm employment appears to have stabilized after the long-term downward trend of previous years. Family workers were still the dominant labor source, but accounted for a smaller proportion of total farm employment. In 1980, family farm labor comprised two-thirds of annual average farm employment compared to three-quarters during the 1960's. Growth in size of farms and in the amount of farm labor required per farm contributed to substitution of hired farmworkers for family labor on individual farms.

In 1983, there were 2.6 million persons who did some hired farmwork during the year. Hired farmworkers in 1983 were predominantly young (50 percent under 25 years), male (78 percent), and lived in nonfarm residences (82 percent). About 73 percent were white, 13 percent were Hispanics, and 14 percent were blacks and others. Five out of 10 farmworkers were household heads; the remainder comprised spouses and other family members. The largest proportions lived in the South (38 percent).

In 1983, there were 226,000 migrant workers who crossed county lines and stayed overnight to do hired farmwork. About 54 percent traveled distances of 500 miles or more to reach their farm jobs. Migrants in 1983 tended to be male (86 percent) and had a median age of 32 years. Migrant farmworkers were twice as likely as all hired farmworkers to be members of minority groups. About 48 percent of the migrants were white, 13 percent were Hispanic, and 39 percent were black and other groups.

A substantial proportion of the hired farm work force comprised seasonal workers who worked for a few days or months during peak planting and harvesting periods. In 1983, only 13 percent worked full time for 250 days or more; almost three-fourths worked on a casual or seasonal basis for less than 150 days. The majority of the hired farm working force had a weak labor force attachment. In 1983, only 57

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percent were in the labor force most of the year, while the remainder generally cited attending school or doing housework as their primary activity. About 29 percent of all farmworkers cited hired farmwork as their chief activity during the year and another 13 percent cited nonfarmwork as their primary employment status.

Farmwork continues to be a relatively low-paying occupation. In 1991, all hired farmworkers averaged $4,815 in annual earnings from all sources, with $3,139 (65 percent) from farmwork. The average earnings for all U.S. private-sector nonagricultural production workers was $14,596. Earnings varied considerably among different groups of farmworkers. For example, workers citing hired farmwork as their primary activity received an average of over $7,500 in total earnings; almost all (96 percent) of this came from farmwork. Persons citing nonfarmwork as their major activity averaged $8,600 in annual earnings with only 15 percent received from farmwork. Persons not in the labor force most of the year received an average of $1,400 with 73 percent from farm earnings. Migrant farmworkers received about $3,000 in annual earnings with 78 percent coming from farmwork.

These data suggest that hired farmworkers are not a homogeneous group of workers. They vary by demographic characteristics, employment experiences, and earnings.

5. FARM MACHINERY

Increased agricultural mechanization since the 1940's has been a major contributing factor in making U.S. farmers the most productive in the world. The transition to intensive farm machinery utilization has dramatically reduced labor requirements in U.S. agriculture, spurring the mass migration of nearly 7 million people from the farm primarily to industrial jobs following World War II.

As farmers mechanized their operations, they began to use other purchased inputs more intensively. The development of higher yielding crop varieties, commercial fertilizers and pesticides, and effective application equipment encouraged farmers to increase agrichemical use more than eightfold between 1945 and 1982. As a consequence of the adoption of more capital intensive production practices, total annual U.S. crop production more than doubled during this period.

Many crop production activities once requiring either intensive seasonal labor or constant attention are now easier to manage as farms have become more mechanized. Fresh fruits and vegetables are now available to consumers year round, in part because of efficient mechanical harvesting, improved storage and transportation, and increased mechanization throughout the entire market chain.

Livestock increasingly is being raised in highly efficient, confined facilities, which require less labor and enhance growers' management capabilities. Automated feeding, watering, and milking systems have improved feed conversion rates, increased productivity, lowered par-

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unit production costs, and freed up growers' time for other enterprises.

More field crop farmers are adopting conservation tillage practices to lower operating costs and reduce soil erosion. New implements increasingly are encouraging farmers to shift to conservation tillage. These ridge planters, no-till drills, conservation cultivators, plows that loosen the subsoil without turning under the surface cover, and specialized agrichemical application equipment.

Farm machinery has become more complex and varied over time. U.S. agriculture today can generally be characterized as a mature market for farm machinery where larger, more efficient tractors and implements are purchased to replace older equipment with less capacity. Consequently, on-farm machinery inventories have steadily declined in recent years due to increased farm machinery capacity and improved performance.

January 1 on-farm tractor inventories declined 2 percent from 4.78 to 4.68 million units between 1979 and 1985. Average tractor size, however, rose from 63 to 67 horsepower during this period. The number of grain combines in 1985 dropped 1.5 percent from 1979 levels, but fewer combines are needed to harvest U.S. field crops today because self-propelled models have more capacity than the older pull-type units.

Another factor accentuating the trend to less machinery on the farm has been the weakening U.S. farm economy. Factors reducing domestic demand for farm machinery in recent years include high interest rates, record debt, declining farm real estate values, and lower farm income. Since 1979, when farmers purchased a record $11.75 billion of new and used machinery, capital expenditures have fallen sharply, to $7.28 billion in 1984. Farmers are holding onto machinery.

The U.S. farm machinery industry has responded to the downturn in demand by offering attractive sales incentives. It also has reduced total output to lower shortrun operating costs and market inventories and has undertaken consolidation efforts to reduce excess productive capacity.

While buying less machinery, farmers have been spending relatively more repairing and maintaining their farm machinery. During the 1970's, farmers annually spent between $0.23 and $0.33 on machinery repairs for each dollar spent on machinery purcheses. This amount rose sharply to $0.59 in 1984 and is expected to continue to rise further.

Total farm expenditures for trucks and automobiles rose about 4 percent from $2.13 billion in 1983 to $2.21 billion in 1984. Farm expenditures for trucks increased about 9 percent to $1.88 billion, while car expenditures fell 18 percent to $327 million.

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6. FARM EXPENSES

Farmers spent $139.5 billion on production goods and services in 1984, about 80 cents for every dollar of gross income from farming. Here are some major items of expense in recent years.

Table 6.—Farm production expenses, 1964, 1969, 1974, 1979, 1982, and 1984

[In billions of dollars]

Major items	1964	1969	1974	1979	1982	1984
Purchased feed	5.5	7.1	14.5	19.3	19.8	20.4
Purchased livestock	2.4	4.2	5.1	13.0	9.7	9.5
Repair and operation	3.9	4.5	8.7	12.9	15.5	15.0
Depreciation	4.9	6.6	10.5	19.3	23.9	23.0
Fertilizer and lime	1.9	2.3	6.1	7.4	8.0	8.9
Short-term interest	1.0	1.4	2.9	6.9	11.3	10.4
Mortgage interest	1.0	1.6	2.8	6.2	10.5	10.7
Property taxes	1.8	2.5	3.1	3.9	4.4	4.4
Hired labor	3.5	4.2	6.1	9.0	10.2	10.1

The index of prices paid by farmers for production items, interest, taxes, and wage rates was 61 percent higher in 1984 than in 1977. This compares with a rise of 70 percent in the Consumer Price Index (CPI).

Part of the increase in farm costs in recent years is due to payments for services that the farmer used to perform. Farmers have become more specialized. Many buy extra feed; others buy all their feed instead of growing it. Suppliers construct buildings, install fences, test soils, lease equipment, and even finance these services as well as sell the supplies. Farmers are also making greater use of credit to increase the size of their farming operations and to buy more equipment. Interest paid by farmers increased sharply in the late seventies and into the eighties, but has leveled out in recent years.

Farmers' real estate taxes have also increased, while the value of their property has fluctuated. However, taxes are a current overhead expense and property values are a long-term asset with future convertibility to cash.

During the past decade, total farm production expenses increased from $71.0 billion in 1974 to $139.5 billion in 1984. Expenses for major overhead items—depreciation, taxes, and interest on farm mortgage debt—rose faster than current operating expenses. Hired labor costs increased 66 percent, with the number of hired farmworkers declining.

Compared with 1974, interest charges per acre in 1984 were 290 percent higher, tax charges per acre were 60 percent higher, wage rates up about 90 percent, prices paid for tractors and self-propelled machinery up 170 percent, other machinery up 190 percent, feed

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prices up 30 percent, and seed prices up an average of 80 percent. Fertilizer prices, which had changed very little during the latter seventies increased 55 percent.

The repayment periods for nonreal estate farm loans vary widely but are usually related to the loan purpose. Loans for ordinary operating and living expenses are usually repaid within 1 year while loans for purchases of large machines, which may require outlays of $20,000 or more, often require 5 to 10 years to repay.

Table 6.—Farm debts, 1940, 1950, 1960, 1970, 1980, and 1982–84

[In billions of dollars]

	Farm debt outstanding, December 31						
	1940	1950	1960	1970	1980	1983	1984
Real estate debt:							
Federal land banks	2.7	1.0	2.5	7.1	36.2	48.8	49.1
Life insurance companies	1.0	1.4	3.0	5.8	12.9	12.7	12.4
Banks	0.5	1.0	1.8	3.8	8.7	9.3	10.2
Farmers Home Administration	0.1	0.3	0.7	2.4	7.7	9.5	10.0
Individuals and others	2.2	2.5	5.0	11.4	30.2	32.3	29.9
Total	6.5	6.1	12.8	30.3	95.8	112.6	111.8
Nonreal estate debt:							
Banks	1.0	2.5	5.0	11.1	31.8	39.1	39.7
Production credit associations [1]	0.2	0.5	1.5	5.3	20.5	20.5	18.8
Farmers Home Administration	0.5	0.3	0.4	0.8	11.8	14.6	15.7
Individuals and others [2]	1.7	2.8	5.1	5.1	17.7	18.9	18.0
Total	3.3	6.1	12.0	22.3	81.8	92.8	92.2
Commodity Credit Corporation	0.6	0.8	1.4	1.9	5.0	10.8	8.7
Total	10.5	13.1	26.2	54.5	182.3	216.2	212.5

[1] Includes loans to other financial institutions (OFI's).
[2] Includes Small Business Administration loans.

7. FERTILIZER

Commercial fertilizers enable farmers to maintain soil fertility, increase production, and reduce unit costs of crop production through increased yields per acre and per farmworker. Fertilizer use had increased steadily prior to 1975, but use declined 4 times in the 1975–85 period. High fertilizer prices in 1975, uncertain income prospects and wet field conditions in early 1978, fewer crop acres and lower application rates in 1982, and a sharp reduction in crop acres in 1983 caused total fertilizer and individual plant nutrient use to decline in the 4 years. Farm consumption of primary plant nutrients—nitrogen (N), phosphate (P_2O_5), and potash (K_2O)—in the United States rose to a record 23.7 million tons in 1981, up about 38 percent in 10 years. Nitrogen is about 50 percent of total nutrient consumption, while

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phosphate and potash are 23 and 27 percent, respectively. After 1981, fertilizer consumption dropped 9 percent in 1982 and another 16 percent in 1983 to 18.1 million tons. In 1984, fertilizer use increased to 21.9 million tons because of a sharp rebound in crop acres.

Four crops—corn, cotton, soybeans, and wheat—require a major share of fertilizer. These crops use about two-thirds of the primary plant nutrients. However, corn uses about 44 percent of the total.

Generally, consumption of plant nutrients is expected to increase, but not as rapidly as in earlier years. Application rates are beginning to level off as are total acres fertilized.

Mixed fertilizers and bagged fertilizer as a proportion of total fertilizer has continued to decline. In 1984 mixed fertilizer comprised about 42 percent of total consumption, compared with 51 percent 10 years earlier.

Dry bagged fertilizers made up 23 percent of total consumption in 1974, but declined to 11 percent in 1984. The proportion of dry bulk and fluid fertilizers increased from 49 to 52 percent and 28 to 38 percent, respectively.

Farmers are using higher analysis fertilizer materials. Average primary nutrient content increased from 41 percent in 1974 to 44 percent in 1984. Nitrogen content increased the most from about 20 percent in 1974 to about 22 percent in 1984. Potash content was up about 1 percentage point from 1974 to 11.6 percent, while phosphate content was down about 1 percentage point to about 10 percent.

8. LIVESTOCK AND POULTRY FEED

Providing feed and feeding livestock and poultry are important parts of today's agricultural industry, involving not only the farmers and ranchers but also the formula feed and grain-processing industry. About 25 percent of grains fed are used on farms where grown. The rest moves through commercial channels.

In 1983–84, the livestock and poultry industries consumed 491.5 million tons of feed and roughage—1 percent more than the 485.3 million tons fed in 1965–66. The quantity of concentrates fed increased 22 percent while roughage declined 9 percent. This change reflects both increased intensity of feeding as well as larger numbers of livestock and poultry. The livestock and poultry fed totaled to 78.2 million grain-consuming animal units (GCAU) in 1983–84, up 5 percent from 74.4 million units on hand in 1965–66. Roughage-consuming animal units (RCAU) increased only about ½ percent from 88.9 million units to 89.3 million.

Some significant shifts occurred in the composition of the grain- and roughage-consuming animal units between 1965 and 1984. Poultry accounted for 27 percent of the GCAU's in 1983–84, compared with 22 percent of the total in 1965–66. This growth in the poultry industry

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is an important factor underlying the 34-percent increase in protein feeds fed during these years. The major shift in the composition of RCAU's has been a decline in the number of dairy cows and heifers and an increase in beef cattle and horses.

Pasture forage accounted for 44 percent of the total tonnage of feed used in 1983–84 This highlights the importance of the livestock industry in efficient use of land. Most of the area pastured is land that cannot be cropped. However, livestock enables this land to make a significant contribution to the food supply of the United States.

Technology for production of livestock and poultry has advanced tremendously, particularly in the last 20 years. This includes many innovations in feed formulation and handling. Progress in feed technology has been possible through developments in nutritional knowledge and genetic improvement in both livestock and poultry. Research also has improved methods of housing livestock, and the bulk formulation, mixing, transporting, and distribution of feeds. One result has been to reduce labor needed on farms. This has been associated with the development of very large poultry and livestock feeding enterprises.

Increasing quantities of poultry and livestock are coming from large enterprises built to a great extent around feed manufacturing. Most of these enterprises have a feed mill at or near the feeding location. Some feed their own livestock, but many others also feed livestock belonging to other firms or individuals. Many mills have custom grinding and mixing services and prepare feeds according to specifications of feed purchasers.

9. AGRICULTURAL CREDIT

The use of credit has played a major part in the growth of agricultural productivity. Farmers have expanded their use of credit rapidly in the last quarter century to finance purchases of land, equipment, and livestock; to cover operating expenses; and to increase the size of their farms. Total farm debt (including Commodity Credit Corporation loans) at the beginning of 1985 was $212.1 billion, about four times the 1970 level, but down from the peak of $216.3 billion in 1983.

Rising agricultural land values throughout the seventies allowed farmers to substantially increase their use of farm real-estate loans, which are secured by a lien or mortgage on farmland or real property. However, the decline in average farmland values since 1981, together with relatively low net-farm income in recent years have left some farmers with financial difficulties. While ample credit is available from commercial lenders, qualifying for such credit has become increasingly difficult.

Real estate loans ordinarily are used to purchase farmland or make major capital improvements to farm property. They may also be used

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Table 7.—Kinds and quantities of feed consumed by livestock and poultry, feeding years 1982–83 and 1983–84 [1]

Feed materials	1982–83 feeding year (1,000 tons)	Percent of total	1983–84 feeding year (1,000 tons)	Percent of total
Grains:				
Corn	81,540	16	102,888	20.9
Other feedgrains	32,080	7	22,069	4.5
Wheat and rye	3,984	1	15,299	3.1
Protein feeds	31,725	6	42,035	8.6
Byproduct feeds	9,072	2	9,482	1.9
Other	2,407	1	5,815	1.1
Total concentrates	160,418	33	195,145	39.7
Hay	49,403	10	59,690	12.1
Other harvested roughages	26,300	5	21,811	4.4
Pasture	248,144	52	214,914	43.7
Total roughage	324,847	67	296,405	60.3
Total, all feeds	485,265	100	491,550	100.0

[1] Measured in feed units (corn equivalents).

to refinance existing debts and particularly to consolidate short-term debts. Farm real estate debt totaled $110.9 billion on January 1, 1985. Institutional lenders, such as Federal land banks of the cooperative Farm Credit System, life insurance companies, commercial banks and the Farmers Home Administration (Federal Government lender) hold over two-thirds of the farm real estate loans. Individuals and other unclassified lenders hold the remainder.

Many of the individuals supplying farm credit are the sellers of farmland. It can be to the advantage of the buyer and the seller to finance the transfer of farm property that way. The downpayment is often less and the interest rate on the balance is usually lower than with regular institutional lenders. The seller collects the sales price of the land plus the interest over a period of years, which provides him or her an investment and a prolonged income. Sellers supplied 33 percent of funds for farmland purchases in 1985, down from 40 percent in 1981. During this period, the Federal land banks have become the most important suppliers of real estate funds, furnishing 44 percent in 1984.

Farm loans (excluding CCC loans) not secured by farmland amounted to $93.0 billion at the beginning of 1984. These funds are used for operating and living expenses; to buy equipment, motor vehicles, and livestock; to make minor improvements to farm property; and for many other purposes. Institutional lenders such as commerical banks, production credit associations of the cooperative Farm Credit

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System, and the Farmers Home Administration hold about 80 percent of such loans. Merchants, dealers, individuals, and other lenders hold the other 20 percent.

18. THE BALANCE SHEET

Farm asset values, including farm households, totaled $955.8 billion on December 31, 1984, a decrease of 10 percent from the previous year. Farm debt outstanding decreased in 1984 by 2 percent, reaching $212 billion on December 31, 1984. This was the second year that loans outstanding decreased. Decreases in assets and debts in 1984 resulted in a 12-percent decline in equity during 1984. This decline in farm equity reflected the difficult cash flow position of some farmers, high real interest rates, and low returns. On the average, farm equity decreased $37,200 to $318,600 per farm on December 31, 1984.

The debt-to-asset ratio increased sharply during 1984, rising from 20.4 percent to 22.2 percent. This is the highest the ratio has been since the Balance Sheet was began in 1939. During the 1970's, the debt-to-asset ratio was 16 to 17 percent.

The value of farm real estate, which accounts for three-fourths of farm assets, declined 3 percent during 1984. The per acre value declined from $783 on April 1, 1984, to $680 on April 1, 1985. At the end of 1984, the average farm real estate value per farm was $322,000. Ten years ago, it was $142,702.

Assets other than farm real estate remained nearly constant during 1984. Farm machinery and motor vehicles were the only nonreal estate asset whose inventory values fell during 1984 because many farmers were reluctant to purchase farm machinery. Their reluctance stems from high interest rates, low returns to farm asset investments, and the high level of indebtedness that many farmers are carrying which cause cash flow difficulties and reduce the willingness of lenders to loan more funds to farmers. The crop and livestock inventory values remained nearly constant between December 31, 1983 and 1984. The greatest increase in value occured in farmers deposits and currency, followed by increases in household equipment and furnishings and cooperatives. The farmers' net worth in cooperatives increased 5 percent despite the losses from bad loans that many cooperative organizations experienced during 1984.

Farm real estate debt, which comprises half of the total debt outstanding, decreased 1 percent in 1984 to total $112 billion on December 31, 1984. Commercial banks had the largest increase of 9 percent in their loans outstanding, while farm real estate debt held by individuals and others decreased by 9 percent.

Nonreal estate farm debt outstanding decreased 3 percent to total $101 billion on December 31, 1984. The Commodity Credit Corporation had the largest decrease, 20 percent. Commercial banks

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and Farmers Home Administration are the only nonreal estate lenders that had increases in their outstanding nonreal estate loans.

Table 8.—Farmers' assets, debts, and equity, 1940, 1950, 1960, 1970, 1980, and 1984 [1]

[In billions of dollars]

Item	1940	1950	1960	1970	1980	1984
Assets:						
Real estate	34.4	89.5	138.5	223.2	848.6	693.7
Physical assets other than real estate	15.6	48.7	54.5	78.8	218.0	208.9
Financial	4.7	16.0	17.8	24.0	42.8	53.2
Total	54.8	154.3	210.9	326.0	1,108.3	955.8
Debts:						
Real estate	6.5	8.1	12.6	30.3	95.8	111.6
Nonreal estate	3.3	8.1	12.0	22.3	81.6	82.2
CCC	0.8	0.8	1.4	1.9	5.0	8.7
Total	10.5	13.1	26.2	54.5	182.3	212.5
Equity	44.3	141.3	184.7	271.5	926.0	743.3

[1] As of December 31. Includes farm households.

11. FARM INCOME [1]

U.S. farmers earned a total of $74.6 billion in income from farm and off-farm sources in 1983. Their farming operations netted $34.6 billion (after adjusting for changes in commodity inventories) for their labor, capital, and management. This was an increase of 119 percent from the drought and farm program-reduced income of 1983. Income from off-farm sources totaled $40.0 billion in 1983 compared with $38.8 billion in 1983.

Farm operators earned over 60 percent of their income from off-farm sources during the last three years. Nearly all farm operators had some off-farm income, but the smaller the farm, the higher the proportion of off-farm income. Those on farms selling less than $20,000 in farm products per year had negative farm incomes on the average, thus the total family income came from off-farm sources. Families with the largest farms—those selling $500,000 or more in farm products per year—averaged less than 5 percent of total income from off-farm sources.

Gross income from farming in 1984 was $174.1 billion, up 15 percent from the previous year. Despite production expenses rising 3

[1] For an explanation of farm income concepts (gross, net, expenses, etc.) see the appendix.

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percent to $139.5 billion, net income from farming increased more than 100 percent to $34.6 billion.

The gross income for 1984 reflected an increase of 4.0 percent in cash receipts from farm marketings because of a combination of rising production and higher average prices, especially for livestock. Direct Government payments fell from $9.3 billion in 1983 to $8.4 billion in 1984. Inventories were up about $17.7 billion from a record negative $9.8 billion change in 1983 to a record positive $7.9 billion in 1984.

The volume of farm products marketed in 1984 rose from the drought and PIK-reduced crop marketings of 1983, because of strong output of feedgrains, oilcrops, and cotton. Prices farmers received for their products averaged 6 percent higher in 1984 than a year earlier. Prices for livestock and livestock products averaged 3.5 percent higher, while crop prices rose about 8.7 percent. Receipts from marketings of livestock and products were up $3.3 billion, and crop sales were $2.2 billion higher than in 1983, with the combined total of $141.8 billion.

Table 9.—Cash income from farming, 1984

[In billions of dollars]

Cash receipts from marketings	141.8
Government payments to farmers	8.4
Farm related income	3.0
Gross cash income	153.3
Cash production expenses	114.1
Net cash income	39.2

Ranked on the basis of total cash receipts from farm marketings in 1984, California was first with $14.2 billion, Texas second with $9.7 billion, and Iowa third with $9.3 billion. The other 7 States in the top 10 (by order of cash receipts from marketings) were Nebraska, Illinois, Minnesota, Kansas, Wisconsin, Florida, and North Carolina. In 1984, the top 10 States accounted for 51 percent of total cash receipts from farm marketings, with the top 5 States accounting for over one-third. Compared with the top 10 States, all of which had over $4.1 billion in marketing receipts, Rhode Island had only about $62 million in marketing receipts and Alaska about $25 million.

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Table 10.—Cash receipts from farm marketings, all States, 1984

[In millions of dollars]

State	Total	Livestock and livestock products	Crops	The five leading commodities ranked by cash receipts				
Alabama	2,189	1,387	802	Broilers	Cattle, Calves	Soybeans	Eggs	Peanuts
Alaska	50	7	18	Grnhse, Nursery	Dairy products	Hay	Potatoes	Eggs
Arizona	1,521	753	768	Cattle, Calves	Cotton	Dairy products	Hay	Lettuce
Arkansas	3,336	1,874	1,462	Broilers	Soybeans	Rice	Cattle, Calves	Eggs
California	14,185	4,471	9,714	Dairy products	Cattle, Calves	Cotton	Grapes	Tomatoes
Colorado	3,352	2,204	1,148	Cattle, Calves	Wheat	Corn	Dairy products	Hay
Connecticut	359	221	139	Eggs	Dairy products	Grnhse, Nursery	Tobacco	Cattle, Calves
Delaware	520	383	137	Broilers	Soybeans	Corn	Dairy products	Eggs
Florida	4,587	1,091	3,496	Oranges	Grnhse, Nursery	Cattle, Calves	Tomatoes	Cane for sugar
Georgia	3,587	1,848	1,739	Broilers	Peanuts	Soybeans	Eggs	Hogs
Hawaii	617	87	530	Cane for sugar	Pineapples	Papayas	Grnhse, Nursery	Dairy products
Idaho	2,288	903	1,386	Cattle, Calves	Potatoes	Wheat	Dairy products	Barley
Illinois	6,738	2,182	4,556	Corn	Hay	Hogs	Cattle, Calves	Dairy products
Indiana	3,924	1,774	2,150	Corn	Soybeans	Hogs	Dairy products	Eggs
Iowa	9,312	5,013	4,300	Hogs	Corn	Soybeans	Dairy products	Eggs
Kansas	5,947	3,620	2,328	Cattle, Calves	Wheat	Hogs	Sorghum grain	Corn
Kentucky	2,652	1,412	1,240	Tobacco	Horses, Mules	Cattle, Calves	Dairy products	Soybeans
Louisiana	1,527	478	1,050	Soybeans	Cotton	Rice	Broilers	Cane for sugar
Maine	456	289	167	Potatoes	Dairy products	Eggs	Cattle, Calves	Broilers
Maryland	1,154	811	343	Broilers	Dairy products	Corn	Soybeans	Cattle, Calves
Massachusetts	383	132	251	Grnhse, Nursery	Cranberries	Dairy products	Eggs	Apples
Michigan	2,777	1,298	1,479	Dairy products	Corn	Cattle, Calves	Soybeans	Hogs
Minnesota	6,242	3,338	2,904	Dairy products	Soybeans	Corn	Cattle, Calves	Hogs

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Table 16.—Cash receipts from farm marketings, all States, 1984—Continued

[In millions of dollars]

State	Total	Livestock and livestock products	Crops	The five leading commodities ranked by cash receipts				
Mississippi	2,168	1,045	1,123	Soybeans	Broilers	Cotton	Cattle, Calves	Dairy products
Missouri	3,729	2,168	1,562	Cattle, Calves	Soybeans	Hogs	Dairy products	Wheat
Montana	1,419	772	647	Cattle, Calves	Wheat	Barley	Dairy products	Hay
Nebraska	7,082	4,523	2,559	Cattle, Calves	Corn	Hogs	Soybeans	Wheat
Nevada	252	172	80	Cattle, Calves	Hay	Dairy products	Potatoes	Sheep, Lambs
New Hampshire	109	76	33	Dairy products	Grnhse, Nursery	Eggs	Apples	Cattle, Calves
New Jersey	505	135	371	Grnhse, Nursery	Dairy products	Soybeans	Tomatoes	Corn
New Mexico	889	557	332	Cattle, Calves	Dairy products	Hay	Wheat	Cotton
New York	2,705	1,911	794	Dairy products	Grnhse, Nursery	Cattle, Calves	Eggs	Corn
North Carolina	4,126	1,027	2,198	Tobacco	Broilers	Hogs	Turkeys	Corn
North Dakota	2,544	690	1,854	Wheat	Cattle, Calves	Sunflower	Barley	Dairy products
Ohio	3,811	1,812	1,999	Soybeans	Dairy products	Corn	Hogs	Cattle, Calves
Oklahoma	2,562	1,776	787	Cattle, Calves	Wheat	Turkeys	Dairy products	Broilers
Oregon	1,792	626	1,166	Cattle, Calves	Wheat	Dairy products	Grnhse, Nursery	Potatoes
Pennsylvania	3,166	2,242	923	Dairy products	Cattle, Calves	Eggs	Grnhse, Nursery	Corn
Rhode Island	62	14	48	Grnhse, Nursery	Dairy products	Eggs	Potatoes	Apples
South Carolina	1,135	429	708	Soybeans	Tobacco	Hogs	Dairy products	Broilers
South Dakota	2,889	1,803	1,086	Cattle, Calves	Wheat	Tobacco	Corn	Dairy products
Tennessee	1,985	1,003	981	Cattle, Calves	Dairy products	Dairy products	Soybeans	Grnhse, Nursery
Texas	9,683	5,901	3,782	Cattle, Calves	Cotton	Hay	Sorghum grain	Corn
Utah	580	444	136	Cattle, Calves	Dairy products	Maple products	Turkeys	Wheat
Vermont	400	369	31	Dairy products	Cattle, Calves	Broilers	Apples	Hay
Virginia	1,794	1,121	673	Cattle, Calves	Dairy products		Tobacco	Soybeans

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[redacted]	2,888	1,080	1,908	Wheat	Dairy products	Cattle, Calves	Apples	Potatoes
[redacted]	226	182	44	Cattle, Calves	Dairy products	Broilers	Apples	Turkeys
[redacted]	5,139	4,073	1,066	Dairy products	Cattle, Calves	Corn	Hogs	Soybeans
[redacted]	574	466	107	Cattle, Calves	Wheat	Sheep, Lambs	Sugar beets	Hay
[redacted]	141,895	72,759	69,086					

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II. THE FARMING OPERATION

12. FARMING REGIONS

The 10 major farming regions in the United States differ in soils, slope of land, climate, distance to market, and in storage and marketing facilities. Together they comprise the agricultural face of the Nation.

The Northeastern States—from Maine to Maryland—and the **Lake States**—the northern tier of States bordering on the Great Lakes from Michigan to Minnesota—are the Nation's principal milk-producing areas. Climate and soil in these States are suited to raising grains and forage for cattle and for providing pastureland for grazing. Broiler farming is important in Maine, Delaware, and Maryland. Fruits and vegetables are important to the region.

The Appalachian Region—Virginia, West Virginia, North Carolina, Kentucky, and Tennessee—is the major tobacco-producing region of the Nation. Peanuts, cattle, and dairy production are also important.

Farther south along the Atlantic is the **Southeast Region.** Beef and broilers are important livestock products. Fruits, vegetables, and peanuts are grown in this area. And, of course, there are the big citrus groves and winter vegetable production in Florida.

In the Delta States—Mississippi, Louisiana, and Arkansas—the principal cash crops are soybeans and cotton. Rice and sugarcane are also grown. With improved pastures, livestock production has gained in importance. This is a major broiler-producing region.

The Corn Belt, extending from Ohio through Iowa, has rich soil, good climate, and sufficient rainfall for excellent farming. Corn, beef cattle, hogs, and dairy products are the major outputs of farms in the region. Other feedgrains, soybeans, and wheat are also important.

Agriculture in the **Northern and Southern Plains,** which extend north and south from Canada to Mexico and from the Corn Belt into the Mountain States, is restricted by rainfall in the western portion and, in the northern part, by cold winters and short growing seasons. About three-fifths of the Nation's winter and spring wheat is produced in the region. Other small grains, grain sorghum, hay, forage crops, and pastures form the basis for cattle. Cotton is produced in the southern part.

The Mountain States—from Idaho and Montana to New Mexico and Arizona—provide a still different terrain. Vast areas of this region are suited to raising cattle and sheep. Wheat is important in the northern parts. Irrigation in the valleys provides water for such crops as hay, sugar beets, potatoes, fruits, and vegetables.

The Pacific Region includes the three Pacific Coast States plus Alaska and Hawaii. Farmers in the northern mainland area specialize in raising wheat, fruit, and potatoes; vegetables and fruit and cotton are important in the southern part. Cattle are raised throughout the

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entire region. And in Hawaii, sugarcane and pineapples are the major crops.

Table 11.—Number of farms and land in farms, by States, 1983–85

State	Farms [1] (number)			Land in farms (1,000 acres)		
	1983	1984	1985 [2]	1983	1984	1985 [2]
Alabama	54,000	54,000	54,000	11,600	11,500	11,500
Alaska	600	650	680	1,540	1,560	1,520
Arizona	8,200	8,300	8,500	37,500	37,500	37,500
Arkansas	56,000	55,000	53,000	16,200	16,100	16,000
California	80,000	78,000	79,000	33,200	33,000	32,800
Colorado	27,000	27,000	26,700	34,800	34,600	34,400
Connecticut	4,300	4,300	3,800	500	500	450
Delaware	3,500	3,600	3,500	650	660	650
Florida	40,000	40,000	39,000	13,000	13,000	13,000
Georgia	55,000	51,000	50,000	13,700	13,500	13,500
Hawaii	4,500	4,500	4,600	1,960	1,950	1,950
Idaho	24,500	24,600	24,600	14,900	14,700	14,700
Illinois	100,000	96,000	90,000	28,700	28,700	28,700
Indiana	84,000	82,000	81,000	16,600	16,400	16,400
Iowa	115,000	113,000	111,000	33,700	33,600	33,600
Kansas	75,000	74,000	72,000	48,300	48,000	48,000
Kentucky	103,000	101,000	100,000	14,500	14,500	14,500
Louisiana	36,500	36,000	35,500	10,100	10,100	10,100
Maine	8,100	8,000	7,800	1,560	1,560	1,520
Maryland	18,000	17,800	18,000	2,700	2,700	2,650
Massachusetts	6,000	6,100	6,000	670	680	660
Michigan	64,000	63,000	63,000	11,400	11,400	11,400
Minnesota	102,000	101,000	96,000	30,400	30,400	30,400
Mississippi	51,000	50,000	48,000	14,300	14,200	14,200
Missouri	118,000	117,000	115,000	31,200	31,000	30,800
Montana	24,000	24,000	23,800	61,300	61,100	60,900
Nebraska	62,000	60,000	59,000	47,400	47,200	47,200
Nevada	2,700	2,700	2,500	8,900	8,900	8,800
New Hampshire	3,400	3,500	3,400	540	550	540
New Jersey	9,500	9,400	8,700	1,000	970	950
New Mexico	14,000	14,000	13,800	46,000	45,800	45,000
New York	49,000	48,000	45,000	9,500	9,400	9,200
North Carolina	83,000	79,000	76,000	11,000	11,000	10,800
North Dakota	36,500	36,000	34,000	41,000	41,000	40,900
Ohio	92,000	90,000	89,000	15,900	15,800	15,800
Oklahoma	73,000	74,000	71,000	33,500	33,000	33,000
Oregon	37,500	37,000	36,500	18,000	18,000	18,000
Pennsylvania	59,000	58,000	58,000	8,700	8,700	8,700
Rhode Island	800	750	750	75	73	73
South Carolina	29,000	28,000	27,500	5,800	5,800	5,500
South Dakota	37,000	37,000	37,000	44,500	44,500	44,500
Tennessee	96,000	95,000	96,000	13,400	13,400	13,400
Texas	187,000	187,000	184,000	137,000	136,800	136,300

Footnotes at end of table.

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Table 11.—Number of farms and land in farms, by States, 1983-85—Continued

State	Farms [1] (number)			Land in farms (1,000 acres)		
	1983	1984	1985 [2]	1983	1984	1985 [2]
Utah	14,000	14,000	13,900	12,000	11,800	11,600
Vermont	7,500	7,300	7,000	1,700	1,700	1,600
Virginia	58,000	57,000	55,000	9,800	9,700	9,600
Washington	38,000	38,000	38,000	16,300	16,100	16,300
West Virginia	22,500	22,000	20,300	4,000	3,800	3,500
Wisconsin	88,000	88,000	83,000	18,200	18,000	17,700
Wyoming	9,200	9,100	9,000	35,000	34,800	34,800
United States	2,370,200	2,332,600	2,284,630	1,024,195	1,019,503	1,015,583

[1] A farm is a place as of June 1 that sells or could sell $1,000 of agricultural products during the year.
[2] Preliminary.

13. FARMS AND LAND IN FARMS

The United States had 2,284,630 farms in 1985, a slight decrease from 1983. This decline continues the downward trend that started in 1936.

Land in farms continues to decline slowly, with the total of 1,016 million acres in 1985 slightly less than a year earlier. Farms averaged 444 acres in size in 1985.

Over the last decade, total land in farms has declined 4 percent, with some of the loss resulting from urbanization and highway construction. In the same period, the number of farms fell 9 percent. Reflecting these changes, average size of farms rose 6 percent.

14. FARMS BY SALES CLASSES

About nine-tenths of all farm products going to market are produced on farms with gross sales of $20,000 or more per year. This upper income group of 937,000 farms in 1983 makes up most of the commercial agricultural economy of the United States. The operators of these farms do the buying and selling that turn the wheels of an enormous agricultural business and food and fiber marketing complex.

Farms selling $100,000 or more represented about 12.2 percent of total farm numbers in 1983. Their net farm income before inventory adjustment averaged $25,000. In the aggregate they received 84 percent of the net income from farming. Farms selling $40,000 to $99,999 worth of agricultural products in 1983—16.1 percent of all farms—received 14.6 percent of net farm income. Farms with sales of $20,000 to $39,999 made up 11.5 percent of all farms and had average net farm incomes of $2,941 in 1983.

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These top sales classes accounted for $139.4 billion in cash receipts (including direct Government payments) of the $149.6 billion for all farms in 1983. The top sales groups comprised 39.5 percent of all farms, accounted for 93.2 percent of the cash receipts and over 100 percent of net farm income.

The number of such farms has almost tripled from 1960 to 1983. Farms grossing less than $20,000 yearly sales declined by over 60 percent.

15. FAMILY-CONTROLLED FARMING

A family-controlled farm business is much like any other business in which an individual or several members of a family own a part or all of the assets and make most of the business decisions. Unlike the business organizations in which management is hired by stockholders, farm businesses are predominantly closely held; ownership and management are not separated.

Family businesses, whether engaged in farming or some other business activity, can be organized in three different ways. The most common is the sole proprietorship. In this form of business organization, an individual or a married couple is responsible for operating the business. Eighty-seven percent of all farms reported in the 1982 Census of Agriculture were sole proprietorships.

The partnership is the next most important form of business organization for farm businesses. About 10 percent of the farms were such businesses. Typically, partnerships include a parent and one or more children or other close relatives. Each member of the partnership contributes some of the capital, shares in management, and shares in earnings or losses in proportion to his or her contribution. Farm businesses organized as partnerships tend to be larger than sole proprietorships because the resources of several individuals can be combined, and additional labor and management are provided by the partners.

The third form of business organization is the corporation, which has a legal identity apart from its shareholders. Any business can be incorporated under the laws of the State in which the organizers choose to file articles of incorporation. Because it is a separate legal "person," it can conduct business in the name of the firm, provide limited liability to its shareholders, and continue to exist even though one or more shareholders may die. Shares in the business may be transferred by sale or gift and a different set of tax laws applies than for sole proprietorships and partnerships.

According to the 1982 Census of Agriculture, there were 59,788 farms operated by corporations. These accounted for about 3 percent of all farms.

Most farming corporations reported in the census (52,657) were family held, meaning that the majority of stock is held by members of

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a single family or close relatives. The remainder (7,131) of corporate farms were nonfamily corporations. The stock of most of these nonfamily corporate farms is closely held by small groups of nonrelated persons, but the stock of some of them is widely held and traded on the over-the-counter market or on organized stock exchanges. A few of the nonfamily corporate farms are owned by nonfarm corporations. Sales of these nonfamily corporate farms came mostly from fed cattle, poultry, and fruits and vegetables.

16. LAND TENURE

Land tenure describes the relationship of the farm operator to the land operated. The major land tenure categories in this country are (1) full owners—those who own all of the land they operate, (2) part-owners—those who own and rent land they operate, and (3) tenants—those who rent all of the land they operate.

The Census of Agriculture reports that in 1982 approximately 2,241,000 farmers operated about 985 million acres of land in farms. Full owners (55.1 percent of all farm operators) operated 342.6 million acres. Part owners (29.3 percent of all farm operators) operated 528.9 million acres. Tenant operators, 11.6 percent of all farm operators, operated about 113.3 million acres.

The number of farm operators has been declining since the peak of 6,812,000 in 1935. This trend is continuing but the decline in recent years does not appear to be as precipitous as in earlier years. Part owners are becoming more important as a tenure class as measured by an increasing proportion of the number of farms, acres in farms, and value of products sold. Despite considerable decline in the number of farms and shifting proportions among the tenure classes, farm operators as a whole own about three-fifths and rent about two-fifths of the land they operate.

Rental agreements vary widely but two types are readily identified, cash and share leases. Under cash leasing, the most common variation is for a fixed cash payment from the tenant to the landowner for the use of the land. Typically, most farming decisions are then made by the tenant. Share leases, which may involve crops, livestock, or both, are more numerous than cash leases, and like cash leases, may be quite flexible. Tenants combine their assets (labor and capital) with the landowners' assets (land and capital) to produce a product that is shared to compensate the contribution each makes. The share each receives varies considerably based on the product grown, quality of the respective assets, local custom, and so on. Often variable costs of production are shared in the same proportion as output.

Under crop-share arrangements, the landowner typically pays for one-third or one-half of the seed, fertilizer, and certain other production expenses and receives a corresponding share of the crops. The landowner also pays the real estate taxes, maintains

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buildings, and pays for permanent improvements to the land. The renter may also pay cash rent for hay or pastureland, or for the use of buildings in addition to a share of the crops.

Under cash rental, the renter pays a fixed dollar amount per acre or for the entire tract of farm, pays for all operating expenses, and keeps all the crops and livestock he or she produces. The landowner pays the real estate taxes and keeps up the buildings.

Under the livestock-share rental arrangements, the landowner and tenant jointly own certain classes of livestock and the machinery that is directly associated with the livestock enterprise, and share operating expenses and net income, most frequently on a 50–50 basis.

17. FARMLAND OWNERSHIP

The 1982 Census of Agriculture reported that of the 2,240,976 farm operators, 1,982,022 owned 603.3 million acres of the 986.8 million acres of land in farms. Of the 383.5 million acres of rented land in farms, 13 percent was owned by farm operators and 87 percent was owned by nonoperator owners. Thus nonfarmers hold about 34 percent of all land in farms.

Results of another survey of landowners, in 1978, indicate that over 80 percent of the farmland was owned by sole proprietors, husbands and wives, or family partnerships. About 10 percent was held by corporations, and half of that by family corporations with 10 or fewer members. Persons identifying themselves as farmers owned 57 percent of the noncorporate farmland; retired people, 17 percent; white collar workers, 14 percent; and blue collar workers, 8 percent.

Farmland ownership was concentrated in the hands of older people. About 30 percent was held by persons over 65, and only 6 percent by persons under 35. Owners of over 10 percent of the acreage were over 75.

Farmland owners were overwhelmingly male. Owners of 85 percent of the noncorporate land were identified as male. However, this does not fully recognize female participation in ownership through husband-wife holdings and family partnerships.

About 94 percent of owners holding 98 percent of noncorporate farmland identified themselves as white and non-Hispanic. Blacks and Hispanics each held less than 1 percent of the farmland, with other minority groups holding even smaller proportions.

Level of formal education was not a major factor in farmland ownership. The proportion of land held by people with a grade school education was the same as that held by college graduates—20 percent each. About one-third of the land was held by people with high school educations.

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Owners of over three-quarters of all farmland lived or had corporate headquarters in the same county as the land owned. Only 6 percent was held by out-of-State residents.

Ownership of farmland is concentrated. The largest 1 percent of owners hold nearly 30 percent of the acreage. Concentration does not appear to have increased significantly since the 1946 nationwide farm ownership survey.

Foreign persons, including corporations, partnerships, and other legal entities, are required under the Agricultural Foreign Investment Disclosure Act to report their holdings of U.S. agricultural land. Summarization of the report under the act confirms that at the end of 1984, slightly more than 1 percent of the farmland is foreign-owned. Forest land accounts for 57 percent of all foreign-owned acreage. Although some local areas may be noticeably affected by foreign ownership, the total quantity is so small nationally that the aggregate effect is insignificant.

18. CONTRACT FARMING AND VERTICAL INTEGRATION

A contract to produce and deliver a farm commodity is basically similar to the contractual arrangements that are widely used in industry. One firm—in this case, a farmer—agrees to plant, care for, and deliver the production from a given acreage of peas to the canning plant. Or the producer agrees to care for a specified number of broilers, hens, or turkeys and turn over the birds or eggs to the processing or marketing firm.

The contractor may specify the variety of seed to be used, the particular strain of broilers or laying hens, the kind of fertilizer or feed to be used, and other specific practices the producer must follow. The contractor may go even further and provide all the inputs needed, and assure the producer a guaranteed minimum for operator labor and use of buildings and equipment.

Contracts involving farm products can range all the way from the above type of contract to one in which the farmer simply agrees in advance to sell a certain amount of a product to a particular buyer. The price may be determined in advance or it may be based upon a formula which takes into account the going market price at the time of delivery.

A high percentage of the production of broilers, eggs, turkeys, sugar beets, fruits and vegetables has long been involved in various kinds of contractual arrangements. In recent years the technique has been applied to cattle feeding, hog production, and certain feed crops and forage. Commercial feedlots will feed out the calves raised by cattle farmers; a feed manufacturer will make contracts with local farmers to produce feeder pigs or raise market hogs. Commercial feedlots often

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contract with nearby farmers to raise forage needed in the feedlot or to deliver feedgrains on a regular schedule.

Each party to a contract is seeking some advantage in the arrangement. The producer often receives technical advice, financing for the production period, and is assured a market outlet. The contractor hopes to get a product that better meets the contractor's requirements for processing and marketing and that is delivered on a schedule that will permit more efficient use of the contractor's plant and labor.

Vertical integration is an alternative to contracts. It is used by input suppliers and processors to achieve control of two or more stages in the production and processing of food products. Broiler processing firms that own hatcheries and feed mills and that engage in direct production (rather than production by contracts) are prime examples of a vertically integrated food system. Canning companies that produce a portion of their crop requirements and cattle feeders who also own slaughter plants are other common examples.

Overall, the extent of contract production and vertical integration increased substantially between 1970 and 1980. About 22 percent of total farm production in 1970 was estimated to have been conducted under both forms of coordination and the proportion increased to about 30 percent in 1980. Contract production increased from 17 to 23 percent and vertical integration from about 5 to 7 percent. Sharpest increases in both contracting and vertical integration occurred for eggs and turkeys in the livestock sector, and in contracting for cotton, grains, oilseeds, and citrus and noncitrus fruits. The major change in contract farming since 1970 has been a sharp increase in farmers' use of forward sales contracts in marketing cash grains, oilseeds, and cotton.

19. RISE OF U.S. PRODUCTION

Farmers in the United States produce 3.2 times more per work-hour than in 1960 and over 13 times as much as in 1930. Although large acreages were held out of crop production between 1960 and 1970, total U.S. farm output increased nearly as fast as U.S. population. During most of the 1970's, acreage has been restored to production and output has continued to increase, even faster than during the 1960's.

An annual increase in farm production has come to be taken for granted, but in the early decades of this century farm production was almost on a treadmill. Agricultural production in the United States rose nearly 1 percent per year from 1910 to 1930. It rose an average of 1.5 percent annually in the 1930's, 2.0 percent in the 1940's, 2.2 percent in the 1950's, 1.0 percent in the 1960's; from 1970 to the record production realized in 1981 it has had an average annual increase of over 3.0 percent.

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Table 12.—Agricultural productivity

Year	U.S. population (July 1) (millions)	Index of total farm output (1977=100)	Index of output per work hour (1977=100)	Crops harvested (million acres)
1930	[1] 123.1	43	9	369
1940	[1] 132.1	50	12	341
1950	151.7	61	19	345
1955	165.3	69	26	340
1960	180.8	76	37	324
1965	194.4	82	52	298
1970	205.1	84	66	283
1975	216.0	95	89	336
1976	218.0	97	94	337
1977	220.2	100	100	345
1978	222.6	104	108	338
1979	225.1	111	119	348
1980	227.7	103	112	352
1981	230.0	118	131	366
1982	232.3	116	133	362
1983	234.5	95	120	306
1984	236.7	[2] 111	[2] 139	[2] 348

[1] Includes 50 States.
[2] Estimated.

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III. FOOD MARKETING

20. COST OF FOOD SERVICES AND DISTRIBUTION

The estimated bill for marketing domestic farm foods—which does not include imported foods—was $243 billion in 1984. This covered all charges for transporting, processing, and distributing foods that originated on U.S. farms. It represented 73 percent of the $332 billion consumers spent for these foods. The remaining $89 billion represented the payment, or gross return, that farmers received.

The cost of marketing farm foods has increased considerably over the years, mostly because of rising costs of labor, transportation, food packaging materials and other inputs used in marketing, and also because of the growing volume of food and increase in services provided with the food. In 1974, the cost of marketing farm foods amounted to $98 billion. In the past decade the cost of marketing rose about 147 percent. In 1984, the marketing bill rose 5 percent.

These rising costs have been the principal factor affecting the rise in consumer food expenditures. From 1974 to 1984, consumer expenditures for farm foods rose $178 billion. Over four-fifths of this increase resulted from an increase in the marketing bill.

The cost of labor is the biggest part of the total food marketing bill. Labor used by assemblers, manufacturers, wholesalers, retailers, and eating places cost $108 billion in 1984. This was 5 percent more than in 1983 and 144 percent more than in 1974. Labor costs have risen more slowly in recent years because of smaller increases in wages and salaries. Improvements in output per work hour, or productivity, have slowed significantly since 1974 and offset a very small part of the rise in hourly earnings of food marketing employees.

Between 1974 and 1984, the total number of food marketing workers increased by more than a third. The total number of food marketing workers in 1984 was about 10 million. The growth in employment, however, was largely confined to public eating places.

21. FOOD EXPENDITURES AND PRICES

Total food expenditures, which include imports, fishery products, and food originating on farms, were $390.1 billion in 1984, an increase of 6.8 percent from 1983. The average was $1,648 per capita, 5.8 percent above 1983. Food expenditures rose three-fourths as much as per capita disposable income, which increased 9.1% from 1983 to 1984.

Retail food prices (including meals served in restaurants) rose 87.3 percent during the last 10 years. Prices of food eaten away from home increased 109.2 percent while retail foodstore prices increased 80.3 percent. Prices of goods and services, excluding food, in the Consumer Price Index climbed 110.6 percent during the 10 years.

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Transportation was up 126.4 percent; housing, 126.1 percent; medical care, 152.2 percent; and apparel and upkeep, 47 percent.

22. FARM-RETAIL PRICE SPREAD

Food prices include payments for both the raw farm product and marketing services. The farm value or payment for the raw product averaged 34 percent of the retail cost of a market basket of U.S. farm foods sold in foodstores in 1984. The other 66 percent, the farm-retail price spread, consisted of all processing, transportation, wholesaling, and retailing charges incurred after farm products leave the farm.

Both farm values and farm-retail spreads have risen over the years, causing food prices to rise. Farm-retail spreads have increased every year the past 10 years, largely reflecting rising costs of labor, packaging, and other inputs. In 1984, farm-retail spreads rose 3.2 percent. Farmers received 5.3 percent more for food commodities in 1984 than they did the previous year. Widening farm-retail spreads are pushing up food costs in 1985. The farm value is expected to decline about 5 percent in 1985. The share of the food dollar spent in grocery stores represented by the farm value is expected to average about 32 cents in 1985. This share ranged from 33 to 40 percent during the past decade.

The percentage of the retail price accounted for by farm value varies widely among foods, reflecting differences in production and marketing functions. It is larger for animal products than for crop-based foods. Farm value is a relatively small share of the retail selling price of foods that require considerable processing and packaging. The wide variation in the farm value share among major food groups in the farm food market basket is shown in table 13.

Table 13.—Farm value as a percentage of retail price for domestically produced foods, 1974 and 1984

Items	1974	1984
Livestock products:		
Meats	54	49
Dairy	49	48
Poultry	58	57
Eggs	68	65
Crop products:		
Cereal and bakery	25	11
Fresh fruits	30	26
Fresh vegetables	36	29
Processed fruits and vegetables	22	20
Fats and oils	47	31
Market basket, average	42	34

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23. PER CAPITA FOOD CONSUMPTION AND NUTRITION

Per capita food consumption in 1984 rose slightly from the 1983 level. The food consumption index for all foods was up 1 percent. The increase was due to a 1-percent increase in both crop and product usage.

Per capita food consumption increased 5.0 percent in the decade ending in 1984. The consumption of foods from crops rose 7.8 percent, while that of foods derived from animals increased 2.6 percent. The increase in consumption of crop-related foods was in fresh fruits and vegetables, sweeteners, potato products, and vegetable fats. Consumption of cereal products also increased. Among the livestock-related products, consumption of poultry and fish was up. Red meat and dairy product consumption declined.

24. TRADE BLOCS

Over the past two decades, regional economic organizations have had a significant impact on world trade in agricultural and industrial products. Regional economic organizations are defined as free trade areas, customs unions, or common markets. Two or more countries which form a free trade area agree to eliminate tariffs on products that originate in their territories. Each member of the free trade area, however, maintains its own tariff schedule for imports from nonmembers.

A free trade area becomes a customs union or common market when the members agree to maintain a common external tariff on imports from nonmembers. In addition, there may be an effort to remove all internal barriers to permit the free flow of labor, capital, goods, and services (even energy).

The European Community (EC), originally composed of Belgium, France, West Germany, Italy, Luxembourg, and the Netherlands, and later joined by the United Kingdom, Denmark, Ireland in 1973, and Greece (in 1981), is an example of such a common market. The EC began in 1957. By 1968, tariffs affecting the six original member countries had been eliminated. Today, a common external tariff applies to imports from outside countries. A common agricultural policy covering nearly all farm commodities is intended to reconcile differences in national agricultural policies and agricultural price variations.

The influence of the EC now extends far beyond the boundaries of the current ten members. Spain and Portugal will accede to the Community in January 1986. Sixty-five African, Caribbean and Pacific countries—nearly all of which are former colonies or trust territories of EC countries—have been granted special trade and aid benefits by

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the EC. Most Mediterranean countries have preferential trade agreements with the EC.

The European Free Trade Association (EFTA) was established in 1960 to facilitate trade among most of the Western European countries not members of the EC. Its seven original members included Austria, Denmark, Norway, Portugal, Sweden, Switzerland, and the United Kingdom (Great Britain and Northern Ireland). Finland joined EFTA as an associate member in 1961; Iceland became a full member in 1970. The importance of EFTA as a trade bloc has diminished since the United Kingdom, Denmark, and Ireland joined the EC in 1973. Spain and Portugal will also be obliged to leave EFTA upon joining the EC.

In 1949, Eastern Block nations (except East Germany) formed the Council for Mutual Economic Assistance, COMECON. Later and separately, East Germany, Mongolia, Cuba and Vietnam joined, and Albania dropped out.

The purpose of COMECON is to improve trade and economic coordination among members according to "basic principles for the international socialist division of labor." More than half the foreign trade of member countries is with other COMECON countries and is governed by long-term agreements.

Since this trade is valued in non-convertible units of exchange and prices are distorted by subsidies, COMECON's influence on world trade is hard to guage. Though many members have expressed eagerness to trade more with non-COMECON nations, their prior obligations to COMECON have often prevented them from doing so.

In the Western Hemisphere, three major economic groups have emerged: The Latin American Integration Association (LAIA), (formerly the Latin American Free Trade Association, or LAFTA), established in 1960; the Central American Common Market (CACM), formed in 1961; and the Caribbean Common Market (CARICOM), established in 1973.

Members of LAIA include Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, and Venezuela. Five members of LAIA, the "Andean Group"—Bolivia, Colombia, Ecuador, Peru and Venezuela—also have established the Andean Common Market (ANCOM).

The members of the Central American Common Market are Guatemala, El Salvador, Honduras, Nicaragua, and Costa Rica. CACM is plagued by many problems. Tensions have been provoked by intercountry disputes as well as internal problems of the members.

The members of CARICOM include former British Caribbean dependencies—Jamaica, Trinidad and Tobago, Barbados, Guyana, Antigua, St. Kitts-Nevis-Anguilla and Montserrat, Dominica, St. Lucia, St. Vincent, Grenada, and Belize.

The United States and Israel concluded a free trade agreement in early 1985, which will eliminate all tariffs progressively over the next 10

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years. The most sensitive agricultural products, such as processed tomato products and citrus juices, will not start the tariff reduction process for 5 years.

25. FOREIGN TRADE—EXPORTS

The United States is the world's leading exporter of agricultural products. In 1984, nearly one-fifth of the world's agricultural exports was shipped from the United States.

U.S. agricultural exports rose for the first time in three years during fiscal 1984 to $38.0 billion. However, a decrease of 16 percent is expected for fiscal 1985. It is estimated that crops from nearly 2 of every 5 acres harvested were exported in 1984.

The foreign market provides a major outlet for U.S. farm production. In fiscal 1984, more than half of the wheat, soybeans, rice, cotton, and sunflower seeds produced were exported. Similarly, more than one-third of the tobacco, feedgrains, and tallow, were exported.

U.S. agricultural exports in fiscal 1984 required financing, inland transportation, storage, and ocean transportation for nearly 144 million metric tons of cargo.

In fiscal 1984, exports of wheat and flour totaled $6.8 billion. Feedgrains totaled $8.1 billion and soybeans and products amounted to $7.5 billion. These commodities accounted for nearly 60 percent of the total exports of farm products.

Almost all of the $38.0 billion of agricultural exports in fiscal 1984 represented commercial sales for dollars. About $1.3 billion moved under Public Law 480 and Agency for International Development (AID) programs.

Although U.S. agricultural exports go to more than 130 countries around the world, 68 percent of those exports was made to only 15 countries in fiscal 1984. Totaling $26.0 billion in U.S. exports, they were Japan, U.S.S.R., the Netherlands, Mexico, Canada, South Korea, Taiwan, West Germany, Spain, Egypt, Belgium, United Kingdom, Venezuela, Italy and Portugal. Asia ($15.2 billion) was the biggest regional foreign market. The other areas were Western Europe ($9.3 billion, which included $6.7 billion to the European Community); Latin America ($5.3 billion); Africa ($2.9 billion); the U.S.S.R. ($2.5 billion); Canada ($1.9 billion); Eastern Europe ($0.7 billion); and Oceania ($0.2 billion).

26. FOREIGN TRADE—IMPORTS

The United States was among the world's six largest importers of agricultural products in 1983. Other large agricultural importers included West Germany, Japan, the United Kingdom, the U.S.S.R., Italy, and France.

U.S. agricultural imports totaled over $19.3 billion in fiscal year 1984. Of this amount, imports of supplementary (partially competitive)

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products totaled $12.8 billion. Complementary (noncompetitive) products totaled $6.5 billion, consisting mainly of tropical products such as coffee, cocoa beans, bananas, crude natural rubber, spices, and tea. About one-half of the agricultural imports, including almost all of the complementary items, was duty-free.

Agricultural commodities were imported by the United States from more than 160 countries in fiscal 1984, but about 80 percent of those imports was from only 25 countries. The largest suppliers of agricultural products to the United States in fiscal 1984 were Brazil ($1.9 billion); Canada ($1.7 billion); Mexico ($1.3 billion); and Indonesia ($0.8 billion). Countries supplying over a half billion dollars each in agricultural products to the United States in fiscal 1984 included Australia, Colombia, the Philippines, France, the Netherlands, Italy, and West Germany.

27. BALANCE OF PAYMENTS

A statement of economic transactions involving the exchange of goods, services, and capital claims between a country and foreign countries is called a "balance of payment."

People in the United States pay those in other countries for imported goods and services. Money also is transferred to foreign countries for economic and military assistance, for investment, private remittances, pensions, and other purposes. The United States also receives money from other countries, mainly in payment for exports and services, mutual defense, investment, and repayments on U.S. Government and commercial loans. When the outflow of money is greater than the incoming money, a deficit occurs. When the amount of incoming money exceeds the outflow, a surplus is said to have accumulated.

Agricultural exports give the United States substantial balance of payments help. During fiscal 1960 through 1984, commercial exports of U.S. farm products brought over $430 billion back to the United States. In fiscal 1984 alone, commercial farm exports totaled $36.7 billion. Exports under Government programs such as Public Law 480 (Food for Peace) totaled over $31 billion for the 23-year period; in 1984 alone, exports under these programs amounted to $1.3 billion. The aggregate net contribution of agricultural exports to the U.S. balance of payments for 1960 through 1983 was $182 billion. The contribution in 1984 was nearly $19 billion.

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IV. AGRICULTURAL SERVICES

28. AGRICULTURAL RESEARCH

Agricultural research provides new knowledge and technology to assure an adequate supply of food and fiber for the Nation's population now and in the future. A basic goal of agricultural research is to establish a high-yielding agriculture that also supports a quality environment and conserves energy and natural resources.

Research has given farmers more control over nature, increased production, reduced production risks, and increased marketing efficiency. Research has led to:

- Genetically improved high-yielding and high-quality pest-resistant varieties of crops.
- Genetically improved livestock with higher reproduction rates.
- Efficient control of diseases, insects, nematodes, weeds, parasites, and other pests, including control of insects affecting humans, animals, crops and stored products.
- Control of livestock diseases and prevention of introduction of exotic diseases.
- Improved control of insects, ticks, and mites that affect livestock.
- Better plant and animal nutrition.
- Improved irrigation equipment, principles, and practices.
- Improved farm equipment and mechanization practices.
- Improved methods for conserving natural resources.
- More efficient processing, transportation, and marketing of food.
- Development of new crops and of new uses for crops.
- Keeping U.S. agriculture efficient and competitive in world trade, and improving capability for export of agricultural commodities.
- Better nutritional quality in foods and added food safety.
- New and better fibers and fabrics.
- Improved levels of rural living.
- Sharing food technology with developing nations that must increase food production.
- Support for programs of action and regulatory agencies.

The responsibility for much of the public segment of the agricultural research and development program lies with the Agricultural Research Service (ARS) of the U.S. Department of Agriculture and the land-grant college system of State agricultural experiment stations (SAES). The interrelated and cooperative programs of USDA and SAES cover research in all 50 States and in the District of Columbia, Puerto Rico, the Virgin Islands, Guam, American Samoa, Micronesia, and the Northern Marianas.

The primary intramural research Agency of USDA, ARS is committed to a balanced program of fundamental and applied research which concentrates on solving problems that are high-risk, long-range, and of national or regional scope. The ARS program plan

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defines six major objectives which develop the means for: (1) managing and conserving the Nation's soil and water resources for a stable and productive agriculture; (2) maintaining and increasing the productivity and quality of crop plants; (3) increasing the productivity of animals and the quality of animal products; (4) achieving maximum use of agricultural products for domestic markets and export; (5) promoting optimum human health and well-being through improved nutrition and family resource management; and (6) integrating scientific knowledge of agricultural production, processing, and marketing into systems that optimize resource management and facilitate transfer of technology to users. The ARS program plan will ensure that our research complements and supports, rather than duplicates, efforts of other organizations within the agricultural research system.

Current agricultural research priorities are designed to meet the challenge of doubled food production, necessary if the population forecast for the year 2000 is to be fed. These priorities include research on:

- **Developing new and improved plant varieties.** Scientists are identifying growth processes through the use of cell culture and are trying to improve plants and animals by genetic engineering. They are also using more conventional plant breeding and genetic techniques, and are developing new hormonal or bio regulatory control of plant and animal growth.
- **Improving animal reproductive efficiency.** Progress is being made toward improved reproductive efficiency of meat and dairy animals, including twinning and multiple births in cattle. The potential for increased reproductive rates is estimated at 100 percent.
- **Increasing animal production efficiency.** Scientists are investigating ways to make maximum use of livestock feedstuffs such as forages and concentrates. In addition, research to exploit gene transfer through the use of recombinant DNA molecules may increase the value of animals as food. Research on methods to prevent, control, or eliminate infectious diseases, internal parasites, and external parasites such as insects, ticks, and mites, can significantly increase the efficiency of livestock production.

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- **Plant germplasm use and preservation.** Unique collections and repositories of information and materials, developed and maintained by ARS, are essential in meeting national research needs and are heavily used by other public and private research organizations. They include facilities for plant germplasm introduction and preservation; clonal repositories; disease-free seed stock; the ARS Culture Collection; and taxonomic collections of plants, microbes, and insects. Germplasm variability is imperative if breeders are to develop new, unique, productive crops for ensuring a stable, plentiful supply of food, feed, and fiber with desirable quality.
- **Removing barriers to crop productivity.** Barriers to increased production of major domestic and export crops are being removed through the development of stress-tolerant varieties. Crop and soil management systems and weather data systems have been improved to facilitate agricultural decisionmaking, and to more efficiently use plant nutrients from fertilizers and organic materials
- **Conserving soil, water, and air.** This research aims at more efficiently utilizing and conserving our natural resources through more efficient water use; reducing pollution; improving fertilizer-use efficiency by plants; controlling erosion and restoring productivity to eroded soils; and preventing water pollution.
- **Effect of soil erosion on soil productivity.** Wind and water are slowly eroding our fertile topsoil. As the topsoil is depleted, the ability of the remaining soil to grow crops is reduced. Scientists are working to determine the impact soil erosion has on crop production in this country, and to develop ways to control erosion and restore productivity to eroded soils.
- **Controlling water quality.** Agricultural practices may have an adverse effect on downstream water quality. To prevent this, scientists across the country are developing and testing economical farm management practices to control water pollution from agriculture.
- **Efficient use and conservation of energy.** Scientists are developing systems to reduce the amount of energy used in agriculture. In addition to doing research on photosynthesis and nitrogen fixation, they are trying to increase fertilizer efficiency and find better methods for drying grain and curing peanuts and tobacco. Minimum tillage, irrigation efficiency, increased forage production, production of biomass for energy, and new uses for solar energy are all being studied.

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- **Plant and animal resistance to pests and environmental stresses.** Both plants and animals are subject to severe losses in productivity through stresses imposed by pests and adverse environmental factors. Losses can be markedly decreased through uses of improved cultural and management systems and genetically superior, stress-tolerant varieties and breeds.
- **New pest control technology.** Even with today's sophisticated pest control technologies, more research is needed to keep pace with the insects and other pests that continue to reduce the potential yield of this country's agricultural commodities by about one-third. The role of insect migration in causing outbreaks is being studied along with the chemistry of host plant resistance to attack, host animal immunity to pests and diseases, insect pathogens for control of major insect pests, the fate of fungicides in plants and animals, the regulation of insect hormone systems, the use of behavioral chemicals to increase effectiveness of beneficial insects, the development of new technology to control weeds, and the incorporation of all these components into a system of integrated pest management.
- **Controlling losses from animal diseases, parasites, and toxicants.** Diseases, internal and external parasites, and toxicants cause major losses and are important causes of low animal productivity. Research is needed to find new and improved methods of identifying losses, rapidly diagnosing recognized diseases, detecting inapparent carriers, and identifying new diseases. Recombinant DNA technology is expected to revolutionize the production of biological materials that are needed to prevent diseases or promote growth.
- **Photosynthesis.** Scientists estimate that an increase of only 1 percent in photosynthetic efficiency would be of great importance in meeting food production goals.
- **Improving the ability of plants to capture or "fix" nitrogen.** All-out food production could result in a shortage of nitrogen fertilizer, and scientists are working to find the best ways to use every pound of fertilizer and to improve the ability of certain plants to capture nitrogen from the air.
- **Improving nutritional and other quality characteristics in certain crops.** High-yielding cereals and legume crops sometimes are deficient in protein content. Improved quality in feedgrains would come close to eliminating the necessity for high protein supplements in animal feed rations, thus releasing protein for other uses. Research on improved protein recovery from crops and animals and better blendings of proteins to improve nutritive quality of food can provide a greater amount of valuable protein in the future.

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- **Food losses.** Food losses occur at every level of the food chain—from production to home preparation to exports. Losses in the marketing sector are estimated at $31 billion per year. Scientists are developing biological methods to prevent and control such losses without harm to the quality and safety of food crops.
- **Producing more and better forage.** Research on forage could lead to improving livestock production capabilities of more than 900 million acres of marginal lands. If vegetation can be increased by only threefold, this land will support more than twice the number of cattle needed for the entire country.

Areas to be given special emphasis in 1985 include conserving, reclaiming, and efficiently using natural resources needed to sustain agricultural production; increasing the efficiency of animal and crop production systems; increasing the efficiency of processing, distributing, and marketing food and agricultural products to users and consumers; maintaining and improving systems to provide people with safe, nutritious, and esthetically pleasing food; and developing the means for integrating scientific knowledge into systems that optimize resource management and facilitate transfer of technology to users.

29. HUMAN NUTRITION RESEARCH

In the Food and Agriculture Act of 1977, Congress mandated the U.S. Department of Agriculture to implement the first comprehensive national plan for human nutrition research and education programs.

Increased interest in human nutrition research has resulted from a number of developments, including a growing conviction that proper nutrition is a primary component in preventive health care, and that a relationship exists between diet and some of the chronic degenerative diseases in the United States.

Research in human nutrition is defined broadly to include research on specific nutrient requirements and food composition; the relation of diet to disease; food safety; factors influencing nutritional practices, food choices, and consumption behavior; and the most effective ways of improving diets.

USDA's Human Nutrition Information Service (HNIS) monitors and reports on the dietary status of the population at three levels: (1) the nutrient content of the U.S. food supply, (2) the food consumption and dietary levels of households, and (3) the food and nutrient intake of individuals. Nationwide Food Consumption Surveys are conducted by HNIS to provide data on households and individuals, which are analyzed by USDA and others to monitor dietary status and identify factors affecting food expenditures, food consumption, and the nutritional quality of diets. HNIS also conducts methodological research related to the survey.

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HNIS compiles information and sponsors research on the nutrient composition of foods (Agricultural Handbook No. 8) for use in its national surveys and for publication and use in computer calculations. The agency develops research-based food guidance and techniques for its use in helping the public make informed food choices.

Human nutrition research currently being conducted by USDA's Agricultural Research Service focuses on:

Human nutrition requirement. Human requirements and safe intake levels for protein, fat, carbohydrate, vitamins, and minerals must still be defined. New methods are being developed for food sampling, analysis, and reporting.

The role of trace elements. Trace elements such as zinc, selenium, chromium and copper have particular functions in the diet. They include interaction with other dietary components such as fiber, physiological and biochemical effects on metabolism according to age group, and the biological availability of minerals.

Nutritional effects during pregnancy, lactation, and early life. Standards for nutrient intake and methods for assessing nutritional status are being developed for infants, children, and pregnant and lactating women. The role of diet in optimum growth and development is being studied.

Assessment of individual nutritional status. Improved methods are being developed to assess marginal nutritional status and early functional indicators of malnutrition. Factors, forces, and trends that cause malnutrition can be identified and criteria developed for the design and evaluation of nutrition intervention programs.

Nutritional needs of the elderly. Research is directed toward identifying the role of human nutrition in the aging process and in maintenance of health throughout the lifespan.

30. PESTICIDES AND INTEGRATED PEST MANAGEMENT

The Nation's food and fiber needs are now being met by only a small portion of the total work force of the Nation, thus freeing much of the work force needed to provide other goods and services that contribute to our high standard of living. This would not be possible without methods to control many of the estimated 10,000 species of harmful insects, more than 1,500 diseases caused by micro-organisms, 1,800 different weeds that cause serious economic losses, and about 1,500 kinds of nematodes that cause damage to crop plants.

The Department has expanded its efforts to develop and implement integrated pest management (IPM). IPM is an approach that employs a combination of techniques to control the wide variety of pests that threaten agricultural products. It involves appropriate reliance on natural pest population controls, usually in a combination of

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techniques that contribute the most economically effective suppression, including cultural methods, diseases that attack specific pests, resistant crop varieties, genetic methods, attractants, augmentation of parasites or predators, or chemical pesticides as needed.

Scientists in USDA's Agricultural Research Service (ARS) and in State agricultural experiment stations (SAES) are conducting research on the various components of IPM to improve their use and application. They study farming practices that might weaken the pest's environment or improve that of its natural enemies. These investigations embrace land preparation and cultivation, crop rotations, fallows, timing of planting and harvesting, and timing of irrigation.

Pest-specific diseases are also being studied. These diseases are caused by micro-organisms such as bacteria, viruses, protozoa, fungi, and their byproducts.

Breeding resistant crops has been one of the most successful control techniques for pests other than weeds. The Department provides germplasm with resistance to diseases and insects, which is a vital source of breeding materials for developing specific varieties in State and industry programs.

Genetic methods being studied by USDA scientists include the sexual sterilization of insects and their release into a native insect population so that the normal insects mate with sterile insects and do not produce offspring. This method is extremely useful for suppressing low levels of some insect populations such as the screwworm over large areas.

Attractants such as sex pheromones are used to lure insects to traps or other devices or to prevent male and female insects from locating each other.

Parasites and predators existing in nature are a vital resource for effective pest suppression and management. Without these natural controls, satisfactory insect control, by any single or combination of means, becomes virtually impossible. Scientists are developing pest control techniques based on the release of imported natural enemies and on the conservation of natural enemies present in the environment. For example, the Mexican bean beetle is effectively controlled on soybeans along the Eastern Coastal Plains by annual releases of a parasitic wasp imported from India. Scientists continue to import predators and parasites to study their host range and effect on pests in this country. Predators and parasites not only control insects but are also being used to control undesirable weeds and, to some extent, nematodes and plant diseases.

Pesticides remain one of our major components in IPM systems, as they are one of the most effective defenses against pests that affect

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our health and well-being and attack our crops, livestock, pets, and structures.

Department scientists conduct studies to find ways to better utilize pesticides through improved timing and methods of application and use. They conduct research on the development of selective nonpersistent and biodegradable pesticides and on improved formulations of pesticides. ARS scientists also develop better methods for detecting and measuring pesticides and their metabolites, and other ways to eliminate or minimize pesticide residues. Department scientists investigate the toxicology, pathology, metabolism, and fate of pesticides in plants, animals, soils, air, and water. Emphasis is given to the determination of pesticide residues in plants and animals, modes of action, metabolic pathways of degradation, metabolic products formed, and the disposition of these products.

Because of limited sales potential, minor uses of pesticides do not provide sufficient economic incentive to warrant registration by the chemical industry. However, as these uses are often highly beneficial to the public, the Department carries out a program to assure that data are developed to support registration of pesticides for these minor uses. Thus, agricultural producers are assured of the continuing availability of pesticides for minor uses and the public is assured of a continuing supply of a variety of high quality agricultural products.

Because pesticides may cause undesirable effects if they are improperly used, the Department encourages the use of effective pest controls that provide the least potential hazard to human health, to livestock, to fish and wildlife, and to beneficial insects. Persistent pesticides are not used in Department pest control programs, when an effective nonresidual method of control is available. When persistent pesticides are necessary, they are used in minimal amounts, applied precisely to the infested area and at minimal effective frequencies.

Department scientists have developed various technologies to remotely sense the presence and densities of pests. In addition, scientists have developed the use of computer-based models to assist growers in analyzing field data as a basis for making the best possible decisions in pest management.

Department scientists are developing ways to harmonize chemical pesticides into IPM systems for various farm commodities, as well as to complement farming or production systems. These scientists are studying new methods of pest control such as hormones that regulate the growth, development, and reproduction of insects and other invertebrates. These hormones or insect growth regulators (IGRs), occurring naturally in low concentrations at various points in the life cycle of an insect, and related chemicals (analogs) can disrupt a wide range of body functions when applied at a critical time during the life

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cycle. IGRs represent a new class of pesticides that have great potential for application in pest management programs because they are narrow-spectrum, biodegradable, and relatively safe materials that support environmental quality.

Because of the important issues on the use of pesticides and pest control practices, the Department has conducted a National Pesticides Impact/Assessment Program since 1976. The primary purpose of this program is to coordinate and develop official USDA policy positions and viewpoints on pesticide and related issues. These issues are critically important to American agriculture. The program is designed to provide the most accurate and objective data and information available for defining and evaluating the benefits and risks of selected pesticides used in agriculture and forestry. This information is necessary to evaluate the effects of pesticide use and regulation on agricultural productivity as well as on the quality and use of soil and water resources.

31. NATIONAL AGRICULTURAL LIBRARY

The free world's largest collection of books and periodicals on agriculture and related subjects is housed at the National Agricultural Library (NAL) in Beltsville, Md.

The library collection consists of 1.8 million books, journals, and other materials on technical agriculture, farming, veterinary science, entomology, botany, chemistry, soil science, food and nutrition, agricultural products, rural sociology, and economics.

Information is made available to a wide variety of individuals and groups around the world through State land-grant university libraries, agricultural experiment stations, State Extension services and education departments, and public and private libraries, and business and industry. Scientists, administrators, researchers, nutritionists, teachers, and many others receive technical information from the NAL collection through these channels as well as by direct inquiries to the library.

Fast, efficient distribution of information is provided through automated information retrieval services.

- **Agricultural On-Line Access (AGRICOLA)** is the master data base, with 2 million records dating from 1970, which provides comprehensive, worldwide coverage of the published literature on agriculture and related subjects as represented primarily in the collections of the NAL. Subfiles cover economics, animal health, environmental impact, energy, food and nutrition, 4-H and Extension. Through online commercial vendors, the data base is available to the public, both domestically and internationally.

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- **Current Awareness Literature Service (CALS)** offers computer searches of current literature to USDA scientists and researchers on a reimbursable basis. Searches are based on 12 areas of interest as specified by the requesting scientists and technicians.

Reference services are provided in the reading room or may be requested in person, by mail, or telephone (301–344–3755), TWX (710–828–0506) USDA, NAL, and telefacsimile (301–344–3675). Translations of foreign-language publications are available on request to USDA personnel and other agricultural researchers and Extension workers.

Document Delivery Service is available to USDA employees in response to job-related requests. Photocopies of journal articles are supplied in lieu of loan. The Library will also lend books to other libraries within the provisions of the National Interlibrary Loan Code, 1980. Photocopy or microfilm copy of documents may also be ordered by non-USDA employees at a minimum charge.

The National Agricultural Library conducts orientation and training programs upon request for USDA employees interested in learning how to use the library and its services. Orientation and training programs for agricultural and library students and other groups tailored to special needs and interests should be requested in advance. Programs can be arranged by telephoning 301–344–3778.

32. EXTENSION SERVICE

The Extension Service in USDA is part of a three-way partnership—Federal, State, and county—known as the Cooperative Extension system. Cooperative Extension is the educational arm of the Department with offices in most of the 3,138 counties in the Nation. County Extension agents provide educational information, materials, fact sheets and publications, and advice in the major areas of agricultural production and marketing, natural resources, family living, food and nutrition, 4–H and youth programs, and community and rural development.

USDA's Extension Service provides support for the State Cooperative Extension Services, including supplying States with details on the numerous Federal programs that impact rural and urban people alike.

A modern electronic delivery network is now being put in place throughout the system. One hundred percent of the counties in 29 States are now equipped with information and education delivery, problem-solving computer systems. Another 12 States report computer networks on line in 50 to 99 percent of their counties.

Agricultural Production and Marketing. County agents provide farmers with the latest agricultural research results in all phases of farm production, marketing, and management (with emphasis on financial management). These research results are provided from both

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State and Federal research centers and experiment stations. State Extension specialists at the 1862 land-grant universities and the 1890 institutions and Tuskegee Institute transfer technology to county agents. Specialists are in constant contact with researchers interpreting and relaying research results to the county Extension staff for distribution to the public.

Natural Resources. County agents and State specialists also provide educational programs and assistance in natural resource management. The nature of programs and assistance varies among States because of the varying nature of the resources within different areas of the Nation. Natural resource programs include: Forest and rangeland management; harvesting, processing, and marketing of forest products; use of wood as energy; soil and watershed management; wildlife and fisheries management; outdoor recreation; and environmental protection and pollution abatements.

Home Economics and Human Nutrition. County home economists provide educational and technical assistance to families and communities related to housing, furnishings and equipment, family economics, home management, child development, parent education, textiles and clothing, and career development.

A special program—the Expanded Food and Nutrition Education Program (EFNEP)—is available in limited areas to assist homemakers on a one-to-one basis. EFNEP aides work closely with low-income families to improve their diets through better nutrition practices, and in the buying, preparation, preservation, and safe storage of food. County offices also provide, as part of their regular programs, information and assistance on nutrition and related subjects, including home food production.

4–H and Youth Programs. Young people may participate in 4–H (head, heart, hands, and health) programs that are planned and initiated by Extension personnel cooperating with volunteer leaders at the local level. Youth may participate in organized 4–H clubs, special interest or short-term groups, school enrichment programs, instructional TV, camping, or as individual members. 4–H youth apply leadership skills, acquire a positive self-concept, and learn to relate to others as they study Extension educational projects.

Community and Rural Development. State and county Extension personnel provide educational and technical assistance to community leaders and local officials to improve the economic, social and cultural development of their communities, including public services and facilities, employment and income, housing, health, and planning and organizational structures.

Communications and Educational Materials. Extension communications staffs, at the national and State levels, work with specialists and researchers to prepare educational materials to use with the public and to adapt new electronic technologies—such as

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teleconferencing, electronic mail, and microcomputers—in educational programs. Information staffs also prepare news releases, radio and television spots, and videocassette tapes explaining new research and technology and Extension programs for use by the mass media.

33. FOREST MANAGEMENT

Studies show that future demands for timber are likely to rise more rapidly than supplies, resulting in increasing costs for lumber and other wood products. Forest Management programs of the U.S. Department of Agriculture are designed to help meet the rising demand for wood products and other forest goods and services.

USDA's Forest Service administers 191 million acres of National Forests and National Grasslands. It cooperates with State Foresters in providing advice on forest management and use to non-Federal owners of forested lands and wood processors, and conducts research to support these activities. The Agricultural Stabilization and Conservation Service (ASCS), in cooperation with the Forest Service and State forestry agencies, provides cost-sharing with private landowners for woodland management practices. The Soil Conservation Service (SCS) assists private landowners in developing conservation plans for all land uses, including forest lands. Through such programs as the Agricultural Conservation Program and the Small Watershed Program, USDA further recognizes the importance of America's woodlands in assuring conservation and enhancement of the Nation's natural resources and a quality environment.

America's forest lands occupy about 740 million acres, one-third of the Nation's 2.3 billion acres of land. The National Forests occupy 187 million acres, including 97 million acres, or 20 percent, of the country's 483 million acres of commercial timber land, and contribute 20 percent of the Nation's total annual timber harvest.

Industry owns 14 percent of those 483 million acres, contributing 30 percent of the national timber harvest. Nine percent is in other public lands which provide about 10 percent of the national timber harvest. But, the majority of forest lands in the Nation, 58 percent, is controlled by about 7.7 million nonindustrial private owners. These private lands contribute 40 percent of the national timber harvest.

In 1977, about 45 percent of the Nation's timber harvest came from the South, 30 percent from the Pacific Coast, and 25 percent from the North and Rocky Mountain areas. The South is expected to be the major timber producer in the future.

The Forest Service is responsible for controlling forest insects and diseases directly on the National Forests, in cooperation with other Federal Departments on other Federal lands, and in cooperation with State Foresters or equivalent State officials on State and private lands in the United States. Insects and diseases are responsible for an

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estimated 5 billion cubic feet loss of timber each year, plus serious impacts on recreation and other forest resources.

Through cooperative programs with the States, USDA provided more than 151,000 assists to woodland owners in 1984. Assistance in tree planting, seeding, timber stand improvement, and other woodland activities affected some 882,064 acres of timberland. Assistance in harvesting and processing of forest products resulted in improved utilization of 90 million cubic feet of wood. State nurseries distributed 732 million seedlings for use in forest and windbarrier plantings. USDA funds helped survey 568 million acres of forest for insect and disease infestation, and over 852 million acres were protected from fire with shared USDA funds. Private forest landowners also improved the recreational potential on 130 thousand acres, and wildlife habitat on 473 thousand acres. Fifty-six thousand forest management plans were prepared. In addition, 1,174 acres of critically eroding area were stabilized by tree planting, 39 miles of forest roads and road banks were stabilized, 351 acres of surface mined areas were stabilized, and 40 miles of firebreaks and fuelbreaks were constructed on critical watersheds.

The Forestry Incentives Program (FIP) is jointly administered by the Agricultural Stabilization and Conservation Service (ASCS) and the Forest Service in cooperation with State forestry agencies. FIP authorizes the Federal Government to share with private landowners the cost of planting trees and improving timber stands. In 1984, 183,900 acres were treated under FIP.

The Forest Service assists State Foresters in organizing, training, and equipping local firefighting forces for protection of lives, crops, livestock, farmsteads, and other resources in rural areas and rural communities. State Foresters are also encouraged to make use of Federal Excess Personal Property for protection of non-Federal lands. In 1984, the Cooperative Fire Protection program suppressed almost 120,135 fires that burned 2,121,922 acres of protected wildlands.

The annual harvests from the National Forest System are carefully calculated to assure continually productive forest lands. In fiscal year 1984, about 10.5 billion board feet of timber were harvested under strict conservation regulations contained in timber sale contracts. Returns from these timber sales were $759.6 million. As provided by law, 25 percent of all National Forest income is returned to the States containing the forest from which the income was derived; in fiscal year 1984 this amounted to $225 million. Under the Multiple-Use Sustained Yield Act of 1960, these forests must be managed so as to yield a wide range of other social goods and services, including recreation, watershed benefits, livestock grazing, and wildlife habitat.

On National Forest lands, the Forest Service in 1984 planted and seeded 224,669 acres, and improved 277,340 acres of young timber by thinning and release from vegetative competition. On the National

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Forests, 19,874 wildfires were controlled, limiting damage to 129,829 acres burned. The National Forests and Grasslands are home to more than 4 million big game animals and 66 species of threatened or endangered wildlife. In fiscal year 1984, 1.4 million head of cattle and 1.1 million sheep and goats grazed on National Forests and Grasslands under special permits granted to ranch operators. In addition to sale of timber, income in fiscal year 1984 was $9.6 million from grazing fees, $51.6 million from mineral receipts, and $30.1 million from recreation and other user fees.

The National Forests contain 32.1 million acres of wilderness, about 36 percent of the total National Wilderness Preservation System.

At sites operated by eight forest experiment stations and the Forest Products Laboratory, research projects covering forest management, protection, and utilization are underway. Subjects being investigated include forest genetics and cultural practices to increase yield, control of insects and diseases, suppression of wildfires and beneficial use of fire in forest management, wildlife and fish habitat improvement, recreation, snowpack control and other watershed considerations, environmentally sound harvesting techniques, timber processing techniques to increase yield, use of low quality or residual wood, protection of wood products from natural degradation, improvements to housing through energy conservation or lumber saving designs, and urban forestry. Research findings are made available to the public through publications and the efforts of the Forest Service's State and Private Forestry arm to put innovations into practice.

34. FARM CREDIT ADMINISTRATION

The Farm Credit Administration is an independent Government agency that supervises the cooperative Farm Credit System, which obtains its loan funds by selling securities to investors. The Farm Credit System is completely owned and controlled by its users—farmers and their cooperatives. The net worth of the system is now more than $12.9 billion. The system is made up of 12 Federal land banks and 431 local Federal land bank associations; 12 Federal intermediate credit banks and 340 local production credit associations; and 13 banks for cooperatives from which farmers' marketing, purchasing, and business service cooperatives obtain loans.

The Farm Credit System provides about one-third of the credit used by farmers, and about two-thirds of the credit used by their cooperatives.

Owner-members currently are using approximately $76.5 billion for credit in outstanding loans from the System.

The Farm Credit Administration operates under a 13-member, part-time policymaking Federal Farm Credit Board. Twelve members of the board are appointed for 6-year staggered terms by the President of

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the United States. The 13th member is appointed by and serves as the representative of the Secretary of Agriculture.

35. CREDIT THROUGH USDA AGENCIES

USDA's **Farmers Home Administration** (FmHA) makes loans and grants to farmers and other rural residents who cannot get credit elsewhere for farming, housing, and rural development purposes. The agency was created to help farmers by making higher risk loans than those that are considered justifiable by other lending agencies. Farm loans continue to occupy a key role in the agency's authorities. In these loans, and in housing loans to individuals, borrowers are expected to refinance their FmHA loans with a private lender when able to do so.

Farm ownership loans are designed to help farmers buy farms or land or enlarge farms; construct or repair buildings; improve land; develop, conserve, and make proper use of their land and water resources.

The maximum farm ownership loan may not exceed $200,000, although FmHA will guarantee loans as high as $300,000 from other credit sources. The interest rate for direct loans from FmHA is based on the rate for current Government borrowing. The repayment term can be up to 40 years. The interest rates and repayment terms for guaranteed loans are negotiated between borrowers and lenders, within FmHA guidelines.

Operating loans are extended primarily to help farmers purchase equipment, livestock, feed, seed, and fertilizer; for other farm and home operating needs; to refinance chattel debts; and to carry out forestry and aquaculture projects.

Farm operating loans made by FmHA may not exceed $200,000; but again, the agency can guarantee loans to farmers from other credit sources as high as $400,000. Loans are to be repaid over a period not exceeding 7 years, but extensions are sometimes granted. Interest rates are based on the rate for current Government borrowing.

Youth project loans are made to rural young people between the ages of 10 and 20 years to finance income-producing farm or nonfarm enterprises that are carried out under an organized and supervised program, such as Future Farmers of America.

Reduced interest rates for ownership and operating loans can be made to beginning and other limited-resource farmers for the first 3 years of the loan, if they cannot afford to pay the full cost-of-money rates.

Emergency loans are available to eligible farmers and ranchers who have suffered qualifying losses from natural disasters in areas that are named by the President, the Secretary of Agriculture, or the FmHA administrator as emergency disaster areas. Loans are made to those

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unable to obtain credit from other sources at 5 percent interest up to $100,000 and at 8 percent above $100,000, to cover up to 80 percent of actual losses. Loans at the market rate are made to cover actual losses for those who can get credit from other sources, but choose to apply for FmHA emergency assistance. Emergency loans cannot exceed $500,000.

In housing, interest rates are determined by rates for current Government borrowing, except that low-income households may qualify for rates as low as 1 percent. Loan programs include: (1) Home ownership loans to purchase, refinance or improve existing residences, build new houses, and acquire building sites. Maximum term is 38 years. (2) Rural rental housing loans to provide rental housing for persons with low or moderate income and for persons age 62 or over. Loans can be coupled with rental assistance payments to reduce rents paid by low-income tenants to no more than 25 percent of their income. Maximum repayment period is 50 years. (3) Rural housing repair loans or grants to very-low-income senior citizens and loans to low-income persons to make repairs and remove health and safety hazards. Maximum grant is $5,000 and maximum loan or loan and grant combination is $7,500. Maximum loan term is 20 years. (4) Farm labor housing loans to finance low-rent housing for domestic farm laborers. Interest rate is 1 percent and maximum term is 33 years. Grants not exceeding 90 percent of development cost of farm labor housing projects are available under some conditions. (5) Loans for development of rural homesite areas. (6) Self-help site development loans and grants to nonprofit organizations providing technical assistance to low-income families building homes by the self-help method.

Loans are made for irrigation, drainage, other soil and water conservation facilities, and for grazing associations. Loans are amortized up to 40 years at an interest rate based on the rate for current Government borrowing. Financial assistance is available for community facilities, for public use in rural areas and towns of up to 20,000 population, and for water and waste disposal systems in towns up to 10,000. Maximum loan term is 40 years, and the interest rate is based on current market yields of municipal obligations. Development grants may be made to pay up to 75 percent of the cost of constructing water and sewer systems. Loans are made to Indian tribes to acquire land within a reservation or Alaskan community for tribal use. These loans are repayable in 40 years.

Resource conservation and development loans are made in designated areas. These loans cannot exceed $500,000 and are amortized up to 30 years. Watershed loans are made to finance the local share of costs in projects approved under the Watershed and Flood Prevention Act or in connection with the 11 watershed improvement programs authorized by the Flood Control Act of 1944.

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They cannot exceed $10 million and are amortized up to 50 years. The interest rate on these loans is determined by the Secretary of the Treasury at the beginning of the fiscal year.

Business and industrial loans are made to individuals, public and private organizations, and federally recognized Indian tribal groups for furthering business and industrial development in rural areas. Loans can be made for projects in the open countryside or in towns up to 50,000 population. Preference is given to towns with less than 25,000 people. FmHA assistance is provided in the form of guarantees that assure reimbursement to the lender of up to 90 percent of principal and interest. Terms of the loans, including repayment period and interest rates, are determined between borrower and lender, within FmHA guidelines.

USDA's **Rural Electrification Administration** (REA), assists rural electric and telephone organizations in obtaining the financing required to provide electric and telephone service in rural areas. Financing may include a loan from REA, REA guarantee of a loan made by others, or REA approval of security arrangements that permit a borrower to obtain financing from other lenders without a guarantee.

REA was established by Executive Order in May 1935 as part of a general program of unemployment relief. Statutory authority was provided by the Rural Electrification Act of 1936, establishing REA as a lending agency with responsibility for developing a program for rural electrification. In October 1949 an amendment authorized REA to make loans to improve and extend telephone service in rural areas.

In May 1971 an amendment authorized the establishment of a Rural Telephone Bank to provide supplemental financing from non-Federal sources for rural telephone systems. The Bank is an agency of the United States in the U.S. Department of Agriculture. Its management is vested in a governor (the REA Administrator) and a board of directors, some of whom are elected from among the Bank's borrowers. Bank loans are made for the same purposes REA loans are made and bear interest at the Bank's cost-of-money rate as determined by the governor.

An amendment in May 1973 established The Rural Electrification and Telephone Revolving Fund in the U.S. Treasury as the source of REA funds for insured loans and loan guarantees. Most loans under the insured program are made at 5-percent interest although some loans are available at 2 percent under special conditions. The revolving fund is replenished through collections on outstanding REA loans and from the sale of certificates of beneficial ownership to the Federal Financing Bank. Certificates are secured by borrowers' notes, and their repayment is insured by REA. Limitations on the amount authorized for loans in any one year may be imposed by Congress.

The REA loan guarantee program went into operation in February 1974. Guaranteed loans bear interest at a rate agreed upon by the

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borrower and the lender. The loans may be obtained from the Federal Financing Bank or any legally organized lending agency qualified to make, hold, and service a guaranteed loan.

As of July 1, 1985, REA's electric program had loaned or guaranteed $51 billion to more than 1,100 borrowing utility systems that extended more than 2 million miles of electric distribution line to more than 12 million consumers.

REA's telephone program had loaned or guaranteed $7.5 billion to more than 1,000 borrowers that extended more than 900,000 miles of telephone lines to 5.4 million rural families and businesses.

36. FARMER COOPERATIVES

Four out of five commercial farmers use marketing and purchasing cooperatives for one reason or another—to market their products, provide their supplies, and procure needed services.

Farmers have large investments in all types of cooperatives. The 1983 Balance Sheet of the Farming Sector shows farmers' equity in agricultural related businesses was $29.8 billion at the beginning of 1985—up 8.1 percent from the previous year. The average cooperative investment per farm is $12,773.

The Agricultural Cooperative Service (ACS) surveys farmer cooperatives each year to measure business activity.

Statistics for 1984 show that 5,781 cooperatives transacted a record business volume of $73.1 billion (excluding inter-cooperative business), surpassing the previous high of $71.5 billion in 1981 and 9.6 percent above the $66.8 billion for 1983. Net margins were $1.02 billion, down slightly from $1.06 billion in 1983. Memberships totaled 4.8 million, indicating many farmers belong to more than one cooperative.

Based on 1983 State data (not collected in 1984), Iowa leads all States in cooperative business volume with $5.8 billion. California is second with nearly $5.4 billion, and Minnesota third with $5.3 billion.

Minnesota leads all States in number of cooperatives and memberships—which 670 cooperatives and 447,843 memberships. Texas is second in number of cooperatives with 422, and North Dakota is third with 396. Wisconsin is second in number of memberships with 318,844, and Iowa is third with 294,469.

Farmers market 30 percent of their raw products and, to varying degrees, process and package products through cooperatives. Grain and soybean products lead in volume of cooperative marketing business—with $20.6 billion. Dairy products are second with $16.7 billion, fruits and vegetables third with $5.1 billion, and livestock products fourth with $3.7 billion. Other products totaling 1 or more billion dollars were: cotton products, $2.5 billion; sugar products, $1.7 billion; and poultry products, $1.1 billion. Total marketing volume was $54.6 billion, up 10.7 percent from 1983.

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ACS estimates that about 27 percent of major farm supplies bought by farmers are purchased from cooperatives. ACS figures for 1984 show cooperatives handled supplies totaling nearly $17.0 billion. Petroleum products are the leading farm supply item purchased at $5.5 billion. Feed accounts for $3.6 billion, and fertilizer for $3.4 billion. Farmers obtained more than $1.5 billion worth of farm-related services through cooperatives.

37. MARKETING IMPROVEMENT

The **Federal-State Marketing Improvement Program,** administered by USDA's Agricultural Marketing Service, is designed to solve problems at the State and local levels. The Federal contribution to projects may equal as much as one-half the project cost. In 1985, marketing improvement work was conducted under 17 projects in 15 States. The projects covered improved marketability of agricultural products, domestic and international market development economic and physical efficiency of marketing, improved marketing information, and studies of new marketing concepts, such as electronic marketing.

The **Wholesale Market Development Program** evaluates and demonstrates new methods in the marketing of agricultural commodities with the goal of increasing the productivity of firms in the agricuitural marketing sector. This program also assists urban areas in the United States in developing more efficient wholesale marketing facilities.

This is done by: (1) performing studies that have potential for increasing marketing efficiency and/or decreasing marketing costs, (2) providing technical assistance to municipalities (government and industry) in evaluating the most effective method for wholesale food firms to distribute agricultural products within an urban area, and (3) handle and transfer products from farm to urban areas. The Wholesale Market Development Program is located in the Market Research and Development Division of the Agricultural Marketing Service (AMS).

The **Food Quality Assurance (FQA) Branch** of AMS's Market Research and Development Division, has the responsibility for managing the specifications and coordinating quality assurance work for food purchased by the Federal Government.

FQA's goal is to make sure that the government buys its food as efficiently and economically as possible. To accomplish this activity, it gathers and reviews all specifications used by the government for a single food item; recommends changes to eliminate duplication, reduce complexity, improve clarity of language, and keep specifications current for government needs. It also approves final specifications used by all government agencies, and maintains a central file of all specifications used by the Federal Government to buy food.

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38. OFFICE OF TRANSPORTATION

USDA's Office of Transportation (OT) consolidated transportation activities of several USDA agencies in 1978 so that specialized talent and materials, and funds could be directed to deal more efficiently with increasingly complex agricultural transportation concerns.

The current organization has two divisions—domestic and international—to reflect growing interest and emphasis on international trade, while providing more support for close analysis of rapidly changing domestic issues.

The domestic division works at programs that encourage and promote an efficient U.S. transportation system for large and small growers, shippers and exporters of agricultural products. Improved rural roads and bridges, fair and equitable rail and truck rates, and competitive barge industry are among the objectives of the domestic division. Current issues include the effects and impact of rail and truck deregulation and waterway user fees on the sale of U.S. farm products.

The international division analyzes, develops, and implements programs aimed at finding better and more cost effective methods to move products to world markets and provides technical assistance to foreign nations to increase trade and expand U.S. markets.

Examples include the coordination of international railroad transportation activities associated with the annual movement of over 4 million tons of grain to Mexico and technical assistance provided for the Caribbean Basin aimed at expanding trade by developing clear guidelines for the shipment of exotic fruits, vegetables, and foliage plants that are commercially produced in tropical and subtropical areas.

Both divisions conduct relevant technical research, often in cooperation with U.S. transportation industries; conduct economic studies; and publish reports aimed at providing accurate and timely information about domestic and international transportation issues, news, and trends.

Technical projects include an experimental rail cattle car equipped with feed and water facilities for long distance movement of livestock, the use of carbon dioxide snow for transporting frozen food in rail cars, and the development of acceptable airline shipping containers that allow safe transport of bees to national and international markets.

Economic studies analyze such topics as the future needs of the U.S. Agriculture export community, the impact of various cargo preference initiatives on agricultural shippers, the feasibility of a transport-oriented export trading company, and the impacts of the Shipping Act of 1984 on U.S. Agriculture.

Reports published in 1984-85 include "The Export Handbook for U.S. Agricultural Products" (revision), "The Impact of Rail

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Deregulation on Marketing of Kansas Wheat," and "Financing Rural Roads and Bridges."

The Office of Transportation also identifies barriers and estimates adverse impacts on transport systems in agricultural and rural areas; provides information and makes recommendations to Federal and State decision makers involved in regulatory, policy, and legislative matters; and represents agriculture and rural communities with regulatory agencies so that fair and equitable rates, services, and facilities are available domestically and internationally.

39. MARKET REGULATORY LAWS

USDA administers and enforces regulatory laws that help make marketing more orderly and efficient. The Perishable Agricultural Commodities Act establishes a code of trading ethics and encourages fair trading in the marketing of fresh and frozen fruits and vegetables. It prohibits unfair and fraudulent business practices and provides a forum to resolve contract disputes. Injured parties can collect damages from any buyer or seller who fails to live up to contract obligations. The law also protects sellers of produce by imposing a trust on a buyer's inventory and receivables which gives the seller a security interest in the product until payment is received.

The Federal Seed Act complements the seed laws of 50 States by prohibiting the sale of seed contaminated with noxious weeds and requiring that all agricultural and vegetable seeds shipped interstate be truthfully labeled. It prohibits false advertising and prohibits imports of seed contaminated with noxious weeds.

The Plant Variety Protection Act extends patent-type protection to developers of plants which reproduce through seeds. Developers of new varieties of such plants as soybeans, cotton, corn, and marigolds apply to USDA for certificates of protection. USDA examiners determine if the variety actually is novel and entitled to protection. The holders of certificates can turn to the courts to protect their "inventions" from exploitation by others.

The Agricultural Fair Practices Act enables farmers to file complaints with USDA if processors refuse to deal with them because they are members of a producer's bargaining or marketing association. This statute makes it unlawful for handlers to coerce, intimidate, or discriminate against producers because they belong to such an association. USDA helps to institute court proceedings when farmers' rights are found to be so violated.

Safe storage plays an important part in the orderly marketing of farm commodities, because immediate sale is not always possible or advantageous. Under the U.S. Warehouse Act, USDA operates a voluntary warehouse licensing system and a program of periodic examinations of licensed warehouses and their contents to help prevent deterioration and loss of stored products. USDA also

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examines those warehouses that store goods owned by the Commodity Credit Corporation and on which CCC loans have been made.

40. MARKETING ORDERS

A Federal marketing order gives farmers a means of solving a wide range of problems through unified action.

It is a flexible tool. It can be tailored to the needs of those using it. It is a legal tool. It has the force of law, with Government (USDA) assuring an appropriate balance between the interests of agriculture and the general public.

Each partner—producers and Government—has a unique role. Producers initiate orders and participate in administering them when the orders so provide. USDA furnishes guidance and sees that the orders are properly administered and enforced.

Marketing order authority is broad and varied, but the basic purpose is to provide the orderly marketing of fruits, vegetables, and milk, and to assure a flow of adequate supplies.

Milk: Federal milk marketing orders establish minimum prices, based upon supply and demand conditions, at which milk handlers or dealers may buy milk from dairy farmers. The order must be approved by at least two-thirds of the farmers supplying milk to the marketing area. A three-fourths favorable vote is required under some circumstances. Public hearings are held when establishing new orders or making order changes.

Operating at the first level of trade—where milk leaves the farm and enters the marketing system—Federal orders lay the foundation for building more stable marketing conditions. They contain a built-in flexibility needed to cope with market changes. To those living in Federal milk marketing areas, this helps assure a steady supply of fresh milk. Most of the Nation's major population centers are within a marketing order area.

Fruits, Vegetables, and Specialty Crops: Growers of certain fruits, vegetables, and specialty crops (spearmint oil, hops, and some nut crops are examples) use marketing agreements and order programs to bring greater stability and orderliness to marketing. There were 48 active programs in fiscal 1985 (Oct. 1, 1984 to Sept. 30, 1985) covering about $6 billion in crops grown in 33 States.

As in the case of milk marketing orders, orders for fruit and vegetable growers are issued by the Secretary of Agriculture only after a public hearing where producers, marketers, and consumers may be heard, and after approval by vote of the producers. After an order has been issued, the growers and handlers administer it through a committee made up of industry members and, in many cases, an additional member who is appointed to represent the public's interest. Their work is financed by industry assessments.

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Most of the orders have quality and size regulations, which make available for the fresh produce market the most desirable grades and sizes. Many have quantity regulations which prevent gluts and shortages by keeping the commodity moving in orderly fashion throughout the marketing season. Some orders also have marketing research and development authority, which permits them to set up projects to find new market outlets to improve marketing, and to advertise and to promote consumption.

41. RESEARCH AND PROMOTION ORDERS

Research and promotion orders authorized by Congress have been established for several commodities, including cotton; potatoes; wool, lamb, and mohair; eggs; and wheat. These programs are similar to marketing orders; public hearings are held, and the industries involved must vote in program provisions before being assessed payments to finance research, promotion, and educational activities.

Producers of cotton, for instance, use provisions for research and promotion in their order to expand markets for cotton and its products and to improve cotton's competitive position in domestic and international markets. Producers pay $1 per bale plus an additional assessment of six-tenths of 1 percent of the value of the cotton to finance advertising and promotion projects and to support research on production, processing, and marketing problems to develop and improve cotton products. The order is administered by the Cotton Board composed of producer representatives selected by the Secretary of Agriculture from nominations made by cotton producer organizations.

A recent addition is a Dairy Promotion and Research Order implementing a national program for dairy product promotion, research, and nutrition education. This is a mandatory program financed by a nonrefundable 15-cent per hundredweight assessment on all milk sold by dairy farmers. In August 1985, producers voted to continue the program.

A promotion and research order for honey is in developmental stages.

42. MARKET NEWS

The Federal-State market news service reports up-to-the-minute information on prices, supply, and demand for most agricultural commodities. This information aids producers, wholesalers, and others in the marketing chain in deciding where and when to buy or sell. The industry voluntarily provides the information on which market news reports are based.

Market reporters interview buyers and sellers at major terminal markets and in production and consumption areas throughout the country. Information gathered in one area is distributed rapidly to other

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areas through USDA's nationwide telecommunication system. It is then released by telephone, mail, and through newspapers, radio, and television.

Through increased use of automatic telephone-answering devices, the market news service is able to provide current information 24 hours a day in many areas. The taped reports are changed several times a day as more information is gathered.

In FY 84 the Federal-State market news service, carried out by the Agricultural Marketing Service in cooperation with 45 State agencies, the District of Columbia, and 3 territories, employed 180 Federal reporters who covered 1,792 markets. Some 2,522,000 printed reports were issued for various market forms of numerous commodities including dairy products, fruits and vegetables, livestock and meat, poultry, eggs, cotton, and tobacco.

43. STATISTICAL REPORTING SERVICE

An orderly production and marketing system depends on an accurate and current accounting of potential output, available stocks, and the other factors that influence agriculture.

The Statistical Reporting Service (SRS), through its Washington, D.C., headquarters and 44 field offices serving all States, annually publishes hundreds of reports detailing production and prospects for crops, livestock, dairy, and poultry. Other releases outline stocks, prices, labor, and weather, and similar items concerning farmers and ranchers and those associated with agriculture.

Geared toward producers, this information can help them plan their planting, feeding, breeding, and marketing programs. The data also are used by agricultural services and businesses, trade groups and financial organizations to determine needed inputs, resources, transportation, and storage related to crop and livestock products.

Information for these continuing series of estimates is gathered from those most closely involved, the producers. Contact is made by mail survey, and telephone and personal interview. For such major crops as corn, cotton, wheat, and soybeans, special on-the-spot counts and measurements of plant development are made in a cross-section of fields throughout the Nation. All the raw indications from these varied sources are summarized by the SRS office serving that State and sent to the agency's Crop Reporting Board in Washington, D.C., which sets and issues the official estimates for the State and Nation. All reports are released at scheduled times and the information is readily available to the public through the Crop Reporting Board and the Government Printing Office.

44. ECONOMIC RESEARCH SERVICE

ERS does research and analysis covering various topics related to agriculture and rural America. Production and marketing of major

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commodities is one area of study. Analysts make projections for supply, demand, and use of specific crops, dairy products, or livestock. They predict farm income and food prices.

Another major area of research is foreign agriculture and trade. Economists assess foreign developments and agricultural policies to determine their impact on U.S. foreign agricultural trade.

Use, conservation, and development of natural resources as they affect economic growth are also covered.

ERS economists examine rural population, employment, and housing trends, and rural people's economic adjustment problems.

Performance of the agricultural industry, including the production, processing, and marketing sectors, is another important area that is routinely assessed by ERS.

45. AGRICULTURAL COOPERATIVE SERVICE

ACS provides research, management analysis, and technical and educational assistance to cooperatives, to strengthen the economic position of farmers and other rural residents. It works directly with cooperative leaders and Federal and State agencies to improve organization, leadership, and operation of cooperatives and to give guidance to further development.

ACS (1) helps farmers and other rural residents develop cooperatives to obtain supplies and services at lower cost, and get better prices for products they sell; (2) helps cooperatives improve services and operating efficiency; (3) informs members, directors, employees, and the public on how cooperatives work and benefit their members and their communities; and (4) encourages international cooperative programs.

ACS publishes research and education materials and issues *Farmer Cooperatives*.

46. PURCHASE PROGRAMS

Each year USDA buys substantial quantities of food which are donated to schools, needy persons, public institutions, the elderly, and disaster victims.

Donations of food started in the 1930's with programs to help market some of the surplus products farmers couldn't sell and to get the surplus products to people who couldn't afford to buy them. Foods stored under price support programs were donated starting in 1949.

Some of the laws which govern USDA food purchases are:

- Section 32 of the Act of August 24, 1935, as amended, which expands market outlets for agricultural products.
- Section 6 of the National School Lunch Act, as amended, which requires the purchase of commodities to supplement food programs to help insure nutritionally adequate meals for children.

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- Section 416 of the Agricultural Act of 1949, which authorizes donation of foods from Commodity Credit Corporation (CCC) stocks.
- Section 709 of the Food and Agriculture Act of 1965, which authorizes CCC to purchase dairy products at market prices when CCC stocks are not available.
- Section 4(a) of the Agriculture and Consumer Protection Act of 1973, as amended, which authorizes funds to maintain the level of donations for domestic assistance programs except schools, without regard to previous restrictions on price. Similar authority for schools is provided under the National School Lunch Act, as amended.
- Section 311 of the Older Americans Act of 1965, as amended, which authorizes funds for nutrition programs for the elderly.

During fiscal year 1984, USDA furnished about 2.5 billion pounds of food for distribution in the school lunch and other domestic food programs, at a cost of about $2.2 billion.

47. FOOD ASSISTANCE PROGRAMS

The food assistance programs administered by USDA's Food and Nutrition Service include food assistance to families and children. All are operated in cooperation with State and local governments.

The Food Stamp Program helps low-income consumers buy more food of greater variety to improve their diets. They receive coupons that are used to purchase food at any authorized retail foodstore. Begun in 1961 as a pilot program, food stamps are now available to low-income families in every county in the United States.

The program is currently serving 20 million people at an annual cost of over $11 billion.

The Food Distribution Program distributes foods acquired under price support, surplus removal, and special purchase programs directly to schools, institutions, disaster relief agencies, summer camps, nutrition programs for the elderly, and needy family programs on Indian reservations. In addition, millions of low-income people receive free surplus government commodities, donated by USDA and distributed by local agencies and volunteers. The special distribution began when the Department announced it would give 220 million pounds of process cheese from its surplus stock to needy people. The list of available "free" commodities now includes butter, nonfat dry milk, honey, flour, rice, and cornmeal.

Child Nutrition Programs benefit children—many from needy families—through school lunches, school breakfasts, and year-round and summer food service programs in nonschool situations such as day care centers and recreation programs. Federal contributions in cash and foods totaled about $4 billion in 1984.

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The National School Lunch Program encourages schools to serve nutritious moderately-priced lunches. Participating schools agree to serve a lunch which meets the nutritional standards set by the Secretary of Agriculture. Schools also agree to provide lunches free or at reduced price to children from low-income families. Currently, the program provides lunch either free or at subsidized prices to about 23 million children each schoolday.

Normally, about 80 percent of the food consumed is purchased locally by schools. The remainder is supplied by the Department of Agriculture. Schools also receive cash reimbursement for each lunch served that meets the program's nutritional standards.

The School Breakfast Program, which is similar to the lunch program, provides nutritious breakfasts to children at school. Currently, the program serves breakfasts to over 3.0 million children, 89 percent of them eligible for free or reduced-price meals.

The Special Milk Program helps schools and other nonprofit child care institutions not participating in any other federally subsidized meal program make fluid milk available to children. The fluid milk helps offset the cost of milk to paying children and provides free milk to those who qualify. Currently, the program serves an averages of 1 million children daily.

The Child Care Food Program provides cash and foods to help furnish meals and snacks to children year-round in nonresidential child care centers, outside school hours centers, day care homes, and other nonprofit institutions. This program currently reaches over 1 million children.

The Summer Food Program for Children provides food service to needy children in the summer or during extended school vacations. Public or nonprofit private, nonresidential institutions or residential summer camps may sponsor the program. More than 1.4 million children took part in the Summer Food Program in 1984.

The Special Supplemental Food Program for Women, Infants, and Children provides cash grants to States to make specific supplemental foods and nutrition education available to pregnant, breastfeeding, and postpartum women, and infants and children up to 5 years of age. The program operates in 50 States, Puerto Rico, and the Virgin Islands. It is currently reaching 3.0 million people.

The Commodity Supplemental Food Program provides a variety of federally purchased foods to supplement the diets of low-income pregnant, breastfeeding or postpartum women, and infants and children under 6 years of age. Currently, the program serves over 140,000 participants up to age 6.

48. EXPORT SERVICES

Holding and expanding the U.S. share in world markets, which provide an outlet for the production of nearly 33 percent of harvested

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crop acres, is crucial to U.S. farm incomes and important to the entire economy. Today, around one-fifth of net farm income comes from overseas sales. Moreover, farm exports sustain about a million U.S. jobs, strengthen the dollar, cut tax costs for farm programs and stimulate production of food for the benefit of all consumers. To maintain and expand the level of exports requires a vigorous export market development program.

The Department's Foreign Agricultural Service (FAS) promotes commercial exports by conducting a market development program abroad in cooperation with agricultural export trade associations that represent a wide variety of U.S. commodities. FAS works with 57 of these associations—known as cooperators—which in turn work with approximately 1,600 overseas organizations, 1,500 U.S. cooperatives, and 8,000 to 9,000 private U.S. firms. In addition FAS works with departments of agriculture in all 50 States.

Cooperator activities are carried out under contractual agreements with the Department. Promotion activities are proposed in annual marketing plans developed by the cooperator and submitted to USDA for approval.

The cooperator program uses two basic approaches to market promotion: One of them is trade servicing, which means helping the buyer choose the right U.S. product and use it efficiently. Trade servicing is usually used to encourage sales of bulk, unprocessed commodities such as soybeans and feedgrains. The other method is direct promotion, used by cooperator and State groups representing producers of semiprocessed and consumer products.

FAS sponsors overseas trade shows featuring U.S. food products, in-store promotions of U.S. foods, and U.S. sales team visits to foreign buyers. FAS also maintains an Agricultural Information and Marketing Service (AIMS) in which foreign buyer requests for U.S. agricultural products are matched by computer with U.S. suppliers. FAS also has a product and label clearing service for U.S. sellers who want to get their product contents and label approved by foreign governments.

FAS also maintains trade offices throughout the world to service key foreign export markets in major or emerging trade areas more directly. Trade offices are now located in Seoul, Korea; London, England; Hamburg, West Germany; Manama, Bahrain; Singapore; Guengzhou, China; Bagdad, Iraq; Caracas, Venezuela; Lagos, Nigeria; Tunis, Tunisia; Beijing, China; Jidda, Saudi Arabia; Algiers, Algeria; and Istanbul, Turkey.

The Public Law 480 program, Titles I, II, and III (also called the Food for Peace Program), and the Commodity Credit Corporation (CCC) Export Financing Programs allow FAS to provide both concessional and commercial financing of U.S. agricultural exports to maintain and expand overseas markets.

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P.L. 480 is aimed at long-term improvement in the economies of developing countries. Title I (the concessional sales part of P.L. 480) provides for financing sales of U.S. commodities on low-interest, long-term credit; Title II is a direct donation program; and Title III—known as the Food for Development Program—allows foreign governments to buy U.S. agricultural commodities on Title I terms on a multi-year basis and resell these commodities in their own countries. Proceeds from these sales—or the commodities themselves—are used for specific self-help projects. As the currencies are used, an equivalent dollar value to the Title I debt is offset, or forgiven.

The CCC Export Credit Guarantee Program (GSM–102) is particularly helpful in opening new markets, preserving or increasing the U.S. share of existing markets, or preventing a decline in the share or loss of a U.S. market. It has been a valuable tool in assisting developing countries in their transition from purchasing under concessional and aid-type programs to commercial purchases. Its usefulness as a financing tool is dependent upon the particular economic environment in the importing country as well as the price competitiveness of the U.S. commodity.

The program provides credit guarantees to protect the U.S. exporter or the exporter's assignee against both commercial and noncommercial (political risk) defaults under a foreign bank letter of credit for export financing of U.S. agricultural commodities on a deferred payment basis for periods ranging from 6 months to 3 years.

In May 1985, the Secretary of Agriculture announced implementation of an export enhancement program. The program's major objectives are to expand U.S. agricultural exports and to encourage U.S. trading partners to begin serious negotiation on agricultural trade problems. The program offers government-owned commodities as bonuses to exporters to expand sales in targeted export markets. Competitive bids are offered to the Commodity Credit Corporation (CCC) by exporters to obtain the bonus commodities. The program involves up to $2 billion of CCC-owned commodities during fiscal years 1985–88.

Initiatives under the program must satisfy four criteria: (1) Additionality—Sales must increase U.S. agricultural exports above what would have occurred in the absence of the program; (2) Targeting—Sales will be targeted on specific market opportunities, especially those that challenge competitors which subsidize their exports; (3) Cost Effectiveness—Sales should result in a net plus to the overall economy, and (4) Budget Neutrality—Sales should not increase budget outlays beyond what would have occurred in the absence of the program.

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49. USDA GRADING PROGRAMS

USDA grade standards and grading services for food and farm products provide buyers and sellers with an impartial appraisal of the quality of what is being sold. The buyer has the right to expect a particular quality from USDA Choice beef, USDA Grade A eggs, or any other USDA graded product. Likewise, the seller has the right to expect a price for the product commensurate with its quality.

Two USDA agencies—Agricultural Marketing Service and Federal Grain Inspection Service—provide voluntary grading services for most food and farm products. Grading is often provided in cooperation with State departments of agriculture, and the users—usually packers or processors who request the service—are charged a fee for it. During FY 1984, USDA graded 53.3 percent of the total beef production in the United States, 45 percent of the total fresh fruits and vegetables, 42 percent of the shell eggs going to consumers, 60 percent of the butter, 55 percent of the frozen fruits and vegetables, 35 percent of the canned fruits and vegetables, 93 percent of the turkeys, and 72 percent of the chickens and other poultry.

USDA also classed 97 percent of the cotton and inspected 95 percent of the tobacco produced in the United States.

USDA grade standards are continually appraised by experts so that they remain realistic. Each year about 7 percent of the standards for about 400 food and farm products are revised to keep them consistent with current marketing practices. In addition, new standards are developed as the need arises.

The number of grades for a particular product depends on its variability. It takes eight grades to cover the quality levels in beef, but only three for turkey.

Grading is used more often at the wholesale level than at the consumer level. Grade labeling of food products is not required by Federal law.

50. MEAT AND POULTRY INSPECTION

All meat and poultry sold in interstate or foreign commerce must be federally inspected for wholesomeness and truthful labeling. Meat and poultry sold in intrastate commerce may be inspected under State inspection programs equal to the Federal program. If a State is unable to operate its own inspection program, USDA's Food Safety and Inspection Service (FSIS) must assume responsibility for intrastate inspection, as well.

FSIS inspectors examined nearly 128 million meat animals and more than 4.5 billion birds in fiscal year 1984. In addition, over 49 billion pounds of processed poultry products and over 70 billion pounds of processed meat products were inspected. Meat and poultry that is unwholesome, adulterated, or mislabeled is kept out of the

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consumer food supply. During 1984, FSIS inspectors condemned as unwholesome more than 41 million birds, and 421,000 meat animals.

USDA compliance officers maintain constant vigilance in marketing channels to check for uninspected meat and poultry, counterfeit inspection stamps, inaccurate labels, and contaminated or spoiled products. USDA may detain any suspect product, and criminal charges may be brought against anyone in marketing channels who violates the Federal meat and poultry inspection laws.

Each foreign plant that ships meat or poultry to the United States and that country's inspection system must be certified by USDA. Federal veterinarians visit the plants as often as necessary to insure compliance with USDA requirements, but must visit them at least once a year to check on the adequacy of foreign inspection. At U.S. ports of entry, USDA inspectors examine shipments, as an additional safeguard, to see that imported products meet U.S. standards for wholesomeness and proper labeling. In fiscal year 1984, FSIS inspectors approved 2.1 billion pounds of products for entry into the United States; more than 16 million pounds was rejected.

Standards and labeling requirements are important phases of the inspection system. In fiscal year 1984, USDA labeling specialists examined for accuracy and completeness over 120,000 label designs submitted by processors for advance approval. These specialists also make sure that ingredient statements on products list the ingredients in order of predominance.

USDA gives special attention to monitoring meat and poultry for possible drug, pesticide, and chemical residues. As part of this effort, FSIS maintains a contamination response system (CRS) to assure rapid communication during discovery and cleanup of environmental contamination problems in the food supply.

USDA conducts a public information campaign to alert consumers to the fact that improper handling of meat and poultry may result in foodborne bacterial poisoning. Should such poisonings arise, a special USDA epidemiological unit works with local, State, and Federal public health agencies to speed identification of the cause.

51. EGG PRODUCTS INSPECTION

The purpose of the Egg Products Inspection Act is to assure that eggs and egg products that reach the consumer are wholesome and unadulterated. Egg products are used by many large manufacturers to make cakes and other prepared food products.

Under the Act, AMS provides continuous mandatory inspection in all plants processing liquid, dried, or frozen egg products. The Act also controls the disposition of restricted shell eggs—those that might contain harmful bacteria that could cause foodborne illness.

In fiscal year 1984, AMS inspected some 1.17 billion pounds of liquid, frozen, and dried egg products in 106 processing plants. USDA

and cooperating State agencies registered 3,902 egg handlers and hatcheries and made 13,770 inspection visits to assure that restricted shell eggs were disposed of properly. About 12,500 individual chlorinated hydrocarbon residue determinations were made, and no violative products were detected.

Under the Act, egg products from a foreign country can be imported into the United States only if the country's inspection system is equivalent to that of the United States. The Canadian system, found equivalent in 1977, remains the only one eligible to export egg products to this country.

52. FEDERAL GRAIN INSPECTION SERVICE

The Federal Grain Inspection Service (FGIS) was established in 1976 as a separate agency in USDA. Its primary task is to carry out provisions of the U.S. Grain Standards Act. The agency is mandated by Congress to establish a nationwide system to assure integrity in the inspection, weighing, and handling of American grain, both at interior and export locations.

The orderly marketing of grain requires uniform descriptions that are understood and accepted by buyers and sellers. To meet this need, official U.S. standards have been developed for 11 grains—corn, wheat, rye, oats, barley, flaxseed, sorghum, soybeans, triticale, sunflower seed, and mixed grain. Standards are reviewed and revised when necessary to meet current marketing needs and practices.

Most grain for export must be officially weighed. It must also be inspected for quality if it is marketed under a U.S. grade. The inspection and weighing of export grain must be performed by FGIS personnel, or licensed employees of eight States that have been delegated this authority.

For grain that is handled at inland locations or sold in the domestic market, private firms and State agencies are designated to provide official inspection service under FGIS supervision. Such inspection is provided on a request basis. Official weighing is authorized on a request basis for grain that is being sold in the domestic market.

Fees for inspection and weighing are paid by the users of the services. Buyers or sellers in either export or inland markets who are not satisfied with the grades they receive can appeal the inspection results.

In addition to the inspection and weighing of grain, FGIS is also responsible, under the Agricultural Marketing Act of 1946, for inspection and weighing of rice, dry beans, peas, lentils, processed grain products, hay, straw, hops, and other assigned agricultural commodities. These services are available on a request basis. Fees for the inspection and weighing services are paid by the users of the services.

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53. REGULATION OF PACKERS AND STOCKYARDS

The Packers and Stockyards (P&S) Act, administered by USDA's Packers and Stockyards Administration, regulates marketing practices in the livestock, poultry, and meat industries. Specifically included are livestock markets (terminal and auction markets), livestock selling agencies, order buyers, livestock dealers, meat packers and live poultry dealers and handlers. The law prohibits unfair, deceptive, discriminatory, and monopolistic trade practices in regulated industries. It also provides financial protection for livestock producers.

The P&S Act encourages fair and open competition in the marketing of livestock, poultry, and meat to assure that true market value is received. Livestock markets, buying stations, dealers, packers, and poultry processors subject to the Act must maintain accurate scales and weigh livestock, poultry and meats accurately.

54. PLANT PROTECTION AND QUARANTINE

In most cases, plant pest problems are handled by farmers, ranchers, and other property owners and their State or local governments. However, when an insect, weed, or disease poses a particularly serious threat to a major crop, the Nation's forests, or other plant resources, Plant Protection and Quarantine (PPQ) of USDA's Animal and Plant Health Inspection Service may join in the control work.

Most pests and weeds that are targets of PPQ programs are not native to America. They gain entry into this country through commercial trade channels, international travelers, or other means. PPQ has the additional responsibility of preventing new introductions.

Agricultural quarantines are the first line of defense against foreign pests. Quarantines regulate the importation of materials that may harbor exotic insects, diseases, or weeds. For example, a tropical fruit may contain the eggs or larvae of a score or more of highly destructive fruit flies. The fruit usually cannot be brought into this country without a permit issued by PPQ—and the fruit may also be subject to inspection, treatment, and other safeguards to eliminate pest entry.

PPQ inspectors at international ports of entry (along with cooperating Customs officers) annually inspect approximately 300,000 air and ship arrivals carrying millions of pieces of luggage. Countless commercial shipments must be checked, as well as all ship and aircraft cargo and stores arriving from overseas. More than 38,000 interceptions of significant plant pests were made in fiscal year 1984 from international travelers arriving by plane or ship. A large volume of prohibited animal products also is intercepted every year by PPQ inspectors. Such products could be the means of accidental introduction of such costly foreign animal diseases as African swine

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fever, foot-and-mouth disease, rinderpest, and contagious pleuropneumonia.

When foreign plant pests do manage to slip through the quarantine barrier, PPQ conducts short-term operations—such as the Mediterranean fruit fly eradication project in Florida—to eradicate or control outbreaks. When pests are new to this country, control techniques may not be available. In any case, PPQ applies interstate quarantines and takes other steps to prevent spread until effective control measures can be developed.

In many cases, the foreign pests are only minor problems in their native lands because they are kept in check by native parasites, predators, and diseases. Since such natural enemies usually do not exist in the United States, one of PPQ's primary control techniques is the importation, rearing, and release of parasites and other biological control organisms. Other tools include pesticides, release of sterile insects, and cultural controls.

Control programs are designed with all safeguards needed to protect the health of people, domestic animals, crops, wildlife, and general environmental values. Whenever possible, nonchemical control methods are used. Each program is critically reviewed for its impact on the environment.

Much of the protection and quarantine work is jointly planned, financed, and executed with the affected States. An example of such cooperative effort is the computerized National Plant Pest Survey and Detection System, a nationwide network coordinated by PPQ. Under the system, universities, State departments of agriculture, agricultural experiment stations, and others can monitor pest populations and spot new outbreaks early.

Hemispheric cooperation is maintained through the North American Plant Protection Organization (NAPPO), involving the Canadian, Mexican, and U.S. plant protection organizations. NAPPO's objectives include control of pests of mutual concern or pests that pose an imminent threat to North American agriculture.

55. VETERINARY SERVICES

Protecting the health of the Nation's livestock, poultry, and other animals is the responsibility of Veterinary Services of USDA's Animal and Plant Health Inspection Service. This team of trained veterinarians, animal health technicians, and other professionals has six primary tasks: Keeping foreign diseases out of this country, eradicating outbreaks of those that get past our border defenses, fighting domestic animal diseases of economic significance, preventing interstate spread of diseases, safeguarding veterinary biologics, and providing for humane care of animals. Disease control and eradication programs are carried out through close cooperation

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among the Federal and State governments, the veterinary profession, and the livestock and poultry industries.

The battle against livestock diseases began in 1884 when Congress created a special agency within USDA to combat bovine pleuropneumonia—a dread cattle disease that was crippling exports as well as taking a heavy toll of cattle in the Northeastern and Midwestern States. Within 8 years, contagious bovine pleuropneumonia had been eradicated. This campaign set the pattern for subsequent disease control and eradication programs.

Diseases that have been eradicated in addition to bovine pleuropneumonia include foot-and-mouth disease, Texas cattle fever, fowl plague, Venezuelan equine encephalitis, sheep scabies, screwworms, exotic Newcastle poultry disease, and hog cholera.

Other diseases and parasites currently being combated by Veterinary Services include brucellosis, cattle fever ticks, tuberculosis, and pseudorabies in swine.

Disease control and eradication measures include quarantines to stop the movement of possibly infected or exposed animals, testing and examination to detect infection, destruction of infected (sometimes exposed) animals, treatment to eliminate parasites, vaccination in some cases, and cleaning and disinfection of contaminated premises.

In this era of rapid air and land travel, U.S. livestock are exposed to ever-increasing threats from exotic diseases. Import regulations—aimed at keeping out such dangerous diseases as foot-and-mouth disease, African swine fever, and rinderpest—are administered by Veterinary Services. In addition, a special team of trained veterinarians and livestock inspectors has been established within Veterinary Services to respond immediately to any outbreak of a foreign animal disease. Veterinary Services also certifies the health of export animals.

Under the Virus-Serum-Toxin Act of 1913, Veterinary Services enforces regulations to assure that animal vaccines and other veterinary biologics are safe, pure, potent, and effective.

Veterinary Services also enforces humane laws, including the handling of livestock transported by railroad; care and treatment of animals used in research, the wholesale pet trade, and zoos and circuses; and the Horse Protection Act of 1970 (amended in 1976) prohibiting "soring"—the use of cruel and inhumane practices to enhance the gait of show horses.

Veterinary Services programs are carried out by a field force of about 600 veterinarians and about the same number of lay inspectors, plus about 250 laboratory technicians, working out of area offices (usually located in State capitals). Staff officials for the various programs are headquartered in Hyattsville, Md.

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56. PRODUCTION ADJUSTMENTS

The Agriculture and Food Act of 1981, the Omnibus Reconciliation Act of 1982, and the Agricultural Programs Adjustment Act of 1984, effective through the 1985 crop, protect farmers' incomes through target prices and land diversion payments for wheat, feedgrains (corn, sorghum, oats, and if designated, barley), upland cotton, and rice. The act also provides measures aimed at assuring an adequate supply of food and fiber at reasonable prices. Rice allotments, both farm and producer, were repealed and program provisions were adopted similar to those for wheat, feedgrains, and upland cotton.

The Secretary of Agriculture is authorized to establish an acreage reduction program for any of the crops if the Secretary determines that the total supply would be excessive in the absence of such program. This program was implemented for 1982, 1983, 1984, and 1985. The acreage reduction is achieved by applying a uniform reduction percentage to the acreage base for the specific crop. This acreage base is determined from the history of the crops planted or considered planted on the farm. The acreage reduced from production (the Acreage Conservation Reserve) must be devoted to conservation use measures sufficient to protect the land from weeds, and from wind or water erosion.

A set-aside program is also authorized for wheat and feedgrains. The Secretary did not use this authority for 1982, 1983, 1984, or 1985. Under the set-aside program, producers on a farm are required to devote to conservation use an acreage equal to a percent of the current year's planted acreage of the crop.

The act also authorizes land diversion payments to producers of rice, feedgrains, upland cotton, and wheat if the Secretary determines that such adjustment is necessary to reduce production. This was not a part of the 1982 program but was applicable to the 1983 program for all commodities; the 1984 program for wheat, and to the 1985 program for wheat, upland cotton, and rice. Acreage removed from production under this program must also be devoted to a conservation use.

Participation in a Payment-In-Kind (PIK) program may also be authorized by the Secretary. Such a program was offered for the 1983 crops of wheat, corn, sorghum, upland cotton, and rice, and for the 1984 crop of wheat. PIK program features are offered only after a farmer agrees to and participates in any acreage reduction, set-aside, and paid diversion program that is applicable for the crop. Acreage removed from the production of the crop or crops under this program must also be devoted to an approved conservation use. Compensation for reducing acreage under the PIK program is made in the form of a quantity of the commodity rather than in dollars.

Producers complying with the announced program are eligible for Commodity Credit Corporation (CCC) loans and purchases, target

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price protection (deficiency payments), and land diversion payments when applicable. The target price is designed to provide income support for producers when the market price is depressed. The payment is based on a rate by which the target price exceeds the larger of the national weighted average market price or the national price support loan rate for the crop. The farm payment is determined by multiplying the rate times the product of the planted acreage within the permitted and established farm yield.

The total amount of payments a person may receive under one or more of the annual programs for wheat, feedgrains, cotton, and rice is limited by the statute to $50,000 for deficiency and diversion payments.

The Extra Long Staple Cotton Act of 1983 abolished acreage allotments for ELS cotton effective beginning with the 1984 crop. Instead, this Act authorizes a program for ELS cotton that is similar to the program for upland cotton, described above. An acreage reduction program was in effect for both 1984 and 1985.

For most kinds of tobacco and peanuts, earlier legislation provided for marketing quotas. The Secretary of Agriculture must proclaim these quotas when supply prospects exceed specified levels. If approved by two-thirds or more of the producers of each commodity voting in a referendum, the marketing quotas become mandatory for all producers of that commodity. The Agriculture and Food Act of 1981 suspended marketing quotas and acreage allotments for peanuts.

A 4-year program is in effect for the 1982- through 1985-crop peanuts, with a two-tier price system and poundage quotas. The national poundage quotas are 1,200,000 tons in 1982, reduced to 1,100,000 tons in 1985. The national average quota support rate is set at not less than $550 per ton. For the 1982 through the 1984 crops, quota peanuts were supported at the $550 per ton minimum. Additional peanuts are supported at levels taking into account world market prices and potential losses to the Government. Thus, the peanut program continues to make U.S. peanuts more competitive in world markets. Under the more rigid programs in effect prior to the 1978 crop, U.S. peanuts were frequently priced out of the world markets.

57. PRICE SUPPORT PROGRAMS

Price support to farmers is provided through commodity loans or other means for food grains (wheat, rice, and rye); feedgrains (corn, sorghum, barley, and oats); oil crops (soybeans and peanuts); wool and mohair; and cotton, milk, tobacco, honey, and sugar. The loan programs are financed by the Commodity Credit Corporation (CCC) and administered by the Agricultural Stabilization and Conservation Service (ASCS).

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Price support assistance for wheat, rice, feedgrains, cotton, peanuts, and tobacco usually is contingent upon participation by the farmer in applicable annual programs. The assistance to farmers is provided at preannounced levels set within statutory guidelines. Methods include loans on crops held in storage by farmers, market purchases in times of excess supply, and supplemental payments to wool and mohair producers.

Milk prices are supported mainly by the buying of excess market supplies of dairy products, such as cheese, butter, and dry milk from processors.

Loans on eligible commodities are made to producers through ASCS county offices and approved cooperatives. The loans are "nonrecourse"—if market prices rise above the loan level, the producer can pay off the loan, with interest, and sell the crop on the market. If prices fall below the loan level, the producer can turn the commodity over to CCC in full payment of the loan. Price support on tobacco and peanuts is made through producer associations acting for individual producers. Price support to sugar beet and sugarcane producers is provided through loans to eligible sugar processors.

58. GRAIN RESERVE PROGRAM

The Agriculture and Food Act of 1981 provides for a producer storage program for wheat and feedgrains by providing original or extended price support loans, repayable in 3 to 5 years. Producers receive annual payments in advance from the Commodity Credit Corporation to help pay for the costs of storage. When a program for a particular commodity is announced, producers who grow wheat, corn, barley, sorghum, or oats can participate in the program. These crops must be under a CCC price support loan to be eligible for the reserve program. Grain placed into the reserve is subject to the same storage requirements as grain in the regular price support loan program. The farmer agrees not to sell grain in the reserve until national average market prices reach predetermined release "trigger" levels. Once these levels are reached, the producer may repay the reserve loan and sell the grain without penalty. Producers who sell grain in the reserve before this "release" date are required to pay an early redemption charge in order to ensure effectiveness of the reserve program. Reserve loans may be called only in an extreme emergency. After the reserve loan is repaid, the producer is not required to sell the grain, but may hold for higher prices.

59. FARM FACILITY LOANS

The Farm Facility Loan Program (FFLP) is designed to help qualifying producers obtain needed onfarm storage for their crops. Applications for these loans are accepted by county ASCS offices only during periods announced by the Secretary of Agriculture. To

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qualify, a farmer must meet eligibility requirements for storing one or more of the following commodities: barley, corn, sorghum, oats, wheat and rice, and participate in an acreage reduction program for such commodity. Soybeans are also eligible on farms participating in the wheat or feedgrain acreage reduction program. The maximum loan amount is 70 percent of the cost of the facility, not to exceed $25,000. Also, the aggregate loan amount cannot exceed $25,000 unless the producer is participating in the grain reserve program. The aggregate may be increased up to $50,000 for grain reserve program participants. The maximum loan term is 5 years and the interest rate is based on the rate charged the Commodity Credit Corporation by the U.S. Treasury.

60. AGRICULTURAL CONSERVATION PROGRAM

The Agricultural Conservation Program (ACP), administered by the Agricultural Stabilization and Conservation Service (ASCS), provides for cost-share assistance to farmers and ranchers in carrying out measures to prevent soil loss from wind and water erosion, solve water conservation and water quality problems, control pollution from animal waste, preserve forest resources, and encourage energy conservation.

The program stresses solving local soil and water conservation and energy and pollution problems. Local authority under the program is delegated to the county ASC committee which consults with the county conservation review groups to develop practices to solve soil and water conservation problems, prevent pollution, and conserve energy. Included are Federal and State agencies and other organizations interested in soil and water conservation and environmental problems. The Soil Conservation Service and Forest Service provide technical program guidance to ASC committee members and technical assistance to farmers in carrying out conservation practices. If a conservation practice is approved, the Government will bear part of the cost of conservation work, while the farmer bears the balance. Special program provisions provide for an increased cost-share rate for low-income farmers.

61. EMERGENCY CONSERVATION PROGRAM

The ASCS Emergency Conservation Program (ECP) provides emergency funds for sharing with farmers and ranchers the cost of emergency conservation measures needed to rehabilitate farmland damaged by wind erosion, floods, hurricanes, or other natural disasters, and for carrying out emergency water conservation measures during periods of severe drought. A farmer or rancher who qualifies may receive up to 64 percent of the cost of the measures. Subject to availability of funds, the ASC county committee in consultation with the State ASC committee and the Area office is

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authorized to implement the ECP for eligible farmers and ranchers when the damage is so costly to repair that Federal assistance is needed to return the land to productive agricultural use.

62. THE WATER BANK PROGRAM

The Water Bank Program is available to farmers or ranchers having specified types of wetlands along major migratory waterfowl flyways. The Agricultural Stabilization and Conservation Service operates the program primarily along the northern part of the Mississippi River and along north-south flyways. The program is designed to preserve and improve migratory waterfowl and other wildlife habitat; preserve and improve wetlands; conserve surface waters; reduce runoff, soil erosion, and stream sedimentation; contribute to flood control, better water quality, and improved subsurface moisture; and accomplish related conservation and environmental objectives. Eligible persons may enter into 10-year agreements, with provision for adjustment of rental rates the fifth year of the agreement, and for renewal at the end of the 10-year period. Owners and operators receive annual payments to meet the purposes of the program. ASC county committees administer the program. Planning and technical services are provided by the Soil Conservation Service.

63. RURAL CLEAN WATER PROGRAM

The Rural Clean Water Program (RCWP), administered by the Agricultural Stabilization and Conservation Service, is an experimental program designed as a cooperative endeavor to develop and test policies, procedures, and methods for controlling agricultural nonpoint sources of pollution. This program treats specific types of water quality problems; i.e., runoff containing nutrients and/or pesticides, animal waste, leachates, irrigation return flows, and sediment. The Soil Conservation Service is responsible for coordinating technical assistance provided in the RCWP.

This voluntary program provides long term financial and technical assistance to owners and operators of privately held agricultural land in selected project areas who install conservation measures to control water pollution. Local authority under the program is delegated to the county ASC committee. Each RCWP project has a Local Coordinating Committee (LCC) that is chaired by the county ASC committee chairperson. Included on the LCC are Federal, State and county agencies, and other organizations interested in improving water quality. The Soil Conservation Service, Forest Service, Cooperative Extension Service, and others provide technical assistance to farmers in carrying out their water quality improvement plans.

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64. SOIL AND WATER CONSERVATION

Soil Erosion Rate. Estimated average annual erosion from the Nation's farmland and other non-Federal lands is more than 6.5 billion tons of soil, according to the Soil Conservation Service (SCS). Of this total, about 1.1 billion tons erode from streambanks, gullies, construction sites, roads, and roadsides.

In many areas, the rate of erosion seriously threatens long-term agricultural productivity. Erosion rates exceed tolerable levels on 299 million acres of cropland, pastureland, forest land, rangeland, and other rural lands. Scientists consider erosion tolerable when eroded topsoil can be replenished through natural processes.

Of the more than 6.5 billion tons of soil losses from wind and water erosion each year, more than 5.4 billion tons erode from rural land.

Sediment, the greatest single water pollutant by volume, is an end product of soil erosion.

Fighting Erosion with Conservation Systems. Fortunately for the future of America's farmlands, many practical systems are available for controlling soil erosion. More than 2 million landusers have signed up with local conservation districts to apply conservation measures on their farms and ranches. Technical help comes mainly from the Soil Conservation Service (SCS) and cost sharing mainly from SCS and the Agricultural Stabilization and Conservation Service (ASCS).

Among the most successful techniques for erosion control are various forms of conservation tillage, in which residue from a previous crop is left in the field. The ultimate conservation tillage system is no-till. This system leaves virtually all of the previous crop residue on the soil surface on a year round basis. Where feasible, no-till farming can reduce erosion to negligible rates.

The National Association of Conservation Districts recently established the Conservation Tillage Information Center in Fort Wayne, Indiana, to encourage the greater use of conservation tillage on American farms. USDA, the agribusiness sector, and other organizations help the Center in its work.

Much conservation remains to be applied. SCS found in 1982 that additional conservation treatment was needed on 58 percent of our cropland; 64 percent of our grazed forest land; 57 percent of the ungrazed forest land; 54 percent of the pasture land; and 62 percent of our rangeland.

SCS gives technical assistance to farmers, ranchers, other individuals and groups, and local and State governments to reduce erosion and sedimentation, conserve water and improve water quality, reduce energy requirements, and plan better land and water uses. SCS provides help largely through some 2,950 local conservation districts that are organized under State law by local people.

In addition to direct help to landowners and operators, SCS has USDA leadership for the National Cooperative Soil Survey. The

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Service also helps reclaim abandoned mines and provides conservation assistance to current mining operations.

SCS provides technical and financial assistance to sponsoring groups in planning and installing small watershed protection projects under Public Law 566 and related acts. The Service also participates in various river basin surveys and investigations, provides flood hazard information for communities, and helps in postflood restoration work on streams and rivers.

SCS has leadership within USDA for the Resource Conservation and Development Program; for the Great Plains Conservation Program, which provides long term financing and conservation assistance in parts of 10 States; and for conducting snow surveys in cooperation with other Federal, State, and private agencies involved in water supply forecasting in the West. The Service assists schools in planning and building outdoor conservation classrooms and helps environmental and wildlife groups with natural resource projects. It also finds new strains or adapts grasses, legumes, shrubs, and trees for a wide range of conservation uses, including increased protection and production of pasture and range; windbreaks; wildlife food and cover; protection of streambanks and shorelines; highway rights-of-way; and reclamation of surface mined land.

65. GREAT PLAINS CONSERVATION PROGRAM

The region known as the Great Plains contains important grazing lands and cropland, including vast acreages of wheat. Located in parts of 10 States, it is an area of light and fragile soils, relatively low rainfall, and periodic drought and dust storms.

In 1956, Congress established the Great Plains Conservation Program (GPCP) to help stabilize the agriculture of this vast area. The program helps land users change their farm and ranch operations to mitigate natural hazards of the Great Plains, such as those related to climate, soil, topography, floods, and salinity. The changes include measures for erosion control, water conservation, and land use adjustment.

Under the program, a participating landowner or land operator—

- Works out a conservation plan and schedule;
- Contracts with USDA to apply all the conservation work in from 3 to 10 years;
- Gets technical help from SCS, as needed; and
- Receives from the Federal Government a portion of the cost of each conservation step as the landowner or operator completes it.

In 1984, nearly 800 farmers and ranchers signed long-term contracts to apply permanent conservation measures on more than 1.8 million acres.

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The program is available to farmers and ranchers in 518 counties in Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming.

The GPCP is coordinated with other Federal, State, and local governmental agencies. It is intended to be an addition to, and not a substitute for, other programs available in the Great Plains area.

In 1980 Congress extended the GPCP to September 30, 1991.

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V. THE RURAL SOCIAL ENVIRONMENT

86. RURAL POPULATION

The United States today is primarily urban. People who live in large cities and their suburbs and in small towns of at least 2,500 population account for three-fourths of the total population. Rural people number about 59.5 million. Although rural population increased from 1970–1980 after being rather stable for several decades, its proportion of the total population fell slightly because the urban population grew more rapidly. Farm residents now number less than 6 million, and are a minority even in the rural population.

Table 14.—U.S. rural population, 1950, 1960, 1970, 1980, and 1984 [1]

[In millions]

	Total	Nonfarm	Farm [2]
Previous farm definition:			
1950	54.5	31.5	23.0
1960	54.0	38.4	15.6
1970	53.9	44.2	9.7
Current definition:			
1980	59.5	53.4	6.1
1984	[3]	[3]	5.7

[1] Rural population includes all persons living in the open country and in towns of less than 2,500 inhabitants.

[2] Farm under the previous definition consisted of persons on places of 10 or more acres if at least $50 worth of farm products were sold in the reporting year, and places under 10 acres with $250 worth of sales. Under the current definition, the farm population consists of persons living on places with sales of agricultural products of $1,000 or more.

[3] Not available.

The farm population has declined as the technological revolution has greatly reduced the workpower required in agriculture. Since 1970, the rural nonfarm population has grown by an amount greater than the loss of farm people.

Future losses in the farm population will be numerically small compared with those of the past, since the present population is more in line with the state of farming technology, and many farm people also work off the farm. The total rural population is not likely to increase very much, however, because some rural communities become urban as they grow.

Rural population trends vary from one region to another. Over a broad area of the Great Plains, western Corn Belt, coastal plain Cotton Belt, and the southern coalfields, the rural population declined substantially from 1940 to 1970 because of major losses in agriculture and mining employment. On the other hand, rural population in the

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Pacific coast, Southwest, Lower Great Lakes industrial belt, North Atlantic coast, southern Piedmont, and Florida Peninsula increased rapidly during this period. Since 1970 most rural counties that were losing population in the 1960's have begun to grow again because of job development, commuting, or retirement. However, low farm income conditions in very recent years have led to slow but widespread decline of population in many agricultural counties since 1980.

67. AGE AND RACE

The median age of the rural population, 30.1 years, is a little higher than that of the urban population as a whole—29.9 years. But migration has greatly altered the age composition in many rural areas. In a number of Great Plains and Corn Belt counties affected by the drop in farm employment, the median age has risen to more than 40 years as young adults have moved away. In these areas, there are typically more people in their sixties than in their twenties. The needs, attitudes, and preferences of the elderly affect those communities more than elsewhere. In other rural communities, however, the median age is in the midtwenties because of higher birth rates or job development.

Except for American Indians, the great majority of blacks and other racial minorities live in urban areas. In the not too distant past, blacks were disproportionately rural and agricultural, but since 1940 they have moved to the cities in large numbers. In the 1960's alone, the number of blacks and other racial minorities on farms dropped about 64 percent. The decline resulted from the near elimination of the sharecropping tenant system in cotton, peanut, and tobacco production in which many blacks had been engaged. About 9 percent of the rural and small town population was black in 1980; 5 percent was Mexican-American, Indian, or other races.

68. NONMETROPOLITAN EMPLOYMENT

Employment in nonmetropolitan areas rose from 26 million in 1974 to 32 million in 1984. The annual average unemployment rate also rose from 5.1 percent to 8.1 percent. Metropolitan areas showed a similar pattern of growing employment and rising unemployment rates. Employment in metro areas increased from 59 million in 1974 to 73 million in 1984. Annual average unemployment rates increased from 5.8 percent in 1974 to 7.3 percent in 1984.

Prior to 1980, unemployment rates were generally higher in metro areas than in nonmetro areas. However, in 1980 a turnabout occurred and the nonmetro unemployment rate has since been as high if not higher than the metro unemployment rate.

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Women entering the labor force accounted for a major part of the Nation's employment growth in recent years. Their number increased 39 percent in metro and nonmetro areas, while the number of employed males rose 13 percent between 1974 and 1984. In 1984, women made up 44 percent of metro and nonmetro employment.

Unemployment rates in nonmetro areas were higher in 1984 than in 1974 for both males and females; however, the rates for males remained lower—7.8 percent for males and 8.3 percent for females. The 1984 metro unemployment rate was 7.3 for both males and females.

The employment status of blacks and other minorities improved little in recent years in both metro and nonmetro areas. The 1984 annual average unemployment rate for blacks and other minorities was 14.4 percent compared with 6.5 percent for whites. Black and other minority employment was greatest in manufacturing, services and government.

About 2.1 million nonmetro teenagers were employed in 1984, with 44 percent working in wholesale-retail trade industries. Teenagers had high unemployment rates in both metro and nonmetro areas. The 1984 teen unemployment rate was 19 percent in nonmetro areas and 18.8 percent in metro areas.

About 3 million people 65 years old and over were employed in 1984—1 million in nonmetro areas. The service industries employed 37 percent of these older workers in nonmetro areas; another 36 percent were self-employed. Farmwork accounted for 20 percent of their employment, mostly as self-employed farm operators. The unemployment rate for the older workers was very low, about 3 percent.

Nonmetro employment shifted toward service-producing industries between 1974 and 1984. The concentration of wage and salary employment in service-producing industries increased from about 34 percent in 1974 to 40 percent in 1984, while comparable metro employment increased from 47 percent to 53 percent. The big growth industries in nonmetro areas were wholesale-retail trade and those forming the "other services" group, which included health, repair, and business services. Manufacturing continued to decline in relative importance in nonmetro areas, but it is still a major employing industry. Agricultural employment also declined in importance between 1974 and 1984.

Overall, self-employment remained about the same in nonmetro areas. Agricultural self-employment (farm operators) decreased as did unpaid family workers.

Metro employment growth concentrated in service-producing industries, other services, wholesale and retail trade, finance,

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insurance, and transportation and communication. Employment decreased in manufacturing and government.

69. RURAL INCOME AND POVERTY

Median family income has consistently been lower in nonmetro areas than in metro areas. During the 1970's, little progress was made in narrowing this income gap. For example, in 1973 the median income for nonmetro families ($10,366) was 20 percent below the metro median income ($12,961). In 1983, the difference between the nonmetro median family income ($20,938) and metro median income ($26,488) was 21 percent.

Nonmetro areas also have a higher percentage of their population living below the poverty level than do metro areas. In 1973, 14.0 percent of the nonmetro population was poor compared with 9.7 percent of the metro population. By 1978, the nonmetro poverty rate had fallen to 13.5 percent of the population, while the metro rate climbed slightly to 10.4 percent. However, by 1983 the nonmetro poverty rate had increased to 18.3 percent, and the metro rate had increased to 13.8 percent.

70. HOUSING

Housing in nonmetropolitan areas has continued its marked improvement since 1970. By 1983, occupied housing increased about 37 percent; the number of homes that were inadequate—that is, lacking complete plumbing or crowded, or both—declined 46 percent; and home ownership rose from 70 to 73 percent.

Even though this rapid improvement occurred, there were 1.9 million nonmetro households living in homes that were inadequate in 1983. About 43 percent of the U.S. stock of inadequate housing was located in nonmetro areas, yet these areas had only 32 percent of the households.

The incidence of inadequate nonmetro housing is closely related to household incomes, and highest among the very poor. For example, 39 percent of the inadequate housing was occupied by households with annual incomes less than $7,000 in 1983, but households with incomes this low represented only 20 percent of nonmetro households. Among the households with incomes from $7,000 to $14,999, the incidence of inadequate housing was about equal to the income distribution—26 percent of the households had incomes in this range and they occupied 27 percent of the inadequate housing.

Yet even among the higher income groups, the incidence of inadequate housing was evident. Households which had incomes of $15,000 and greater occupied 34 percent of the inadequate housing; 54 percent of all households had incomes this large.

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71. LOCAL GOVERNMENTS

In 1982 there were 82,688 units of local government serving the Nation. Sixty-four percent of these were located outside Standard Metropolitan Statistical Areas (SMSA's) or New England county metropolitan areas (NECMA's). In 1981, local governments employed the equivalent of 7.8 million full-time workers and spent over $245 billion for the provision of public services and the construction and maintenance of public facilities.

Over the last 20 years, local government activity has increased dramatically in metro and nonmetro areas alike. However, most of the growth occurred in the sixties and early seventies. Since the mid-seventies, inflation-adjusted spending per capita has actually declined for the local government sector. Slow growth in the size of Federal and State intergovernmental aid programs, taxpayer resistance to tax increases, and the poor performance of the economy have all acted to hold down the growth of local government spending during the last 5 years. Although economic recovery helped raise local government revenues by 8 percent in 1983, local government employment increased only 0.2 percent.

In general, nonmetro governments continue to spend less per capita than do governments inside SMSA's. As a result, debt burdens are lower and fewer dollars are collected for local government functions. Nonmetro governments rely heavily on intergovernmental transfers, particularly from the State government. In 1977, 36 percent of the revenue raised by nonmetro governments came from the State (either as State aid, or as Federal aid passed through the State government) compared with 31 percent for metro areas. Both user fees and utility charges have been consistently more important revenue sources in nonmetro than in metro areas. User fees in particular have grown in importance over the last decade. In contrast, direct Federal aid has consistently been more important to local governments in metro than in nonmetro areas.

For many of the governments serving highly rural isolated areas, financial trends of the last decade have created problems much like those faced by large city governments. Highly rural areas—counties with no urban centers of their own and no close SMSA—have high per capita property taxes, high tax effort (taxes in relation to income), high vulnerability to cuts in intergovernmental aid, and have experienced rapid increases in per capita expenditures. Each of these characteristics is associated with potential financial problems. For most nonmetro areas, however, the trends of the seventies have led to less fiscal stress.

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72. FEDERAL FUNDING TO RURAL AREAS

Although Federal funds going to rural areas and small towns grew more rapidly in the late 1970's than Federal funding to metropolitan areas, rural areas still lagged behind.

Federal funds reaching nonmetro counties averaged $2,139 per person in 1980, up 68 percent from 1976. Funding to metro counties averaged $2,529, up 63 percent since 1976.

Federal funding includes payments, loans, and other transfers of money to support Federal, State, and local programs in agriculture, forest management, housing, transportation, education, health, public assistance, Social Security, veterans' benefits, defense, energy, and so on. Figures on the metro-nonmetro distribution of funds are based on the roughly 85 percent of Federal funds that can be reliably traced to county levels.

Although rural areas made some progress in catching up with more urbanized counties, the figures may overstate their position. A much larger share of nonmetro funding is in the form of loans and loan guarantees—20 percent compared with only 11 percent of metro funding. Loans must be repaid, so they have less value than grants.

Nonmetro counties also received a much larger share of their funds for income security programs, especially retirement and disability programs. Forty-six percent of nonmetro funds were for such programs, compared with 37 percent of metro funds.

Despite overall improvement in nonmetro funding, more recent metro area gains threaten to offset the growing urban-rural parity. Since 1978, metro area funding growth, at 22 percent, has outpaced that in nonmetro areas, at 16 percent.

73. RURAL EDUCATION

Rural persons have a lower educational level than urban dwellers. In 1980, 73 percent of all metropolitan residents 18 years and older had completed high school, compared to 65 percent of their nonmetropolitan counterparts. Differences were more pronounced for certain groups, however. Only 41 percent of nonmetro blacks 18 years and older were high school graduates; the comparable figure for metro blacks was 59 percent. Nonmetro residents of Hispanic origin registered a 43 percent rate. Nonmetro blacks and Hispanics who were farm residents recorded the lowest high school completion rates: 30 percent each.

Functional illiteracy, meaning completion of less than 5 years of education, persists as a problem for some groups. In 1980, 12 percent of metro persons of Hispanic origin, age 18 and over, were classified as functional illiterates, compared with 18 percent of their nonmetro counterparts. For blacks, age 18 and over, the percentages were 5 percent in metro areas and 14 percent in nonmetro areas. Results of

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two 1975 surveys, funded by the U.S. Office of Education, indicated that about one of five Americans is functionally illiterate in the sense that they cannot exercise the minimal skills of reading, writing, and making simple calculations necessary to function in modern society.

Results of the former Department of Health, Education, and Welfare's National Assessment of Educational Progress for 1969–78 considered the achievement level of students up to age 17 in eight subject-matter categories. Students in small and extremely rural places showed a strong tendency to be below the national median score, particularly with regard to writing, citizenship, mathematics and science. In contrast, students in the urban fringe and high-income metro areas tended to be well above the national median in at least six of the eight categories. However, National Assessment tests in recent years have shown that rural students are making steady improvements relative to urban test takers.

A central education issue for the remainder of the 1980's concerns the shift from a goods-producing to a services-producing economy. Rural students and minorities with less adequate educational preparation will experience increased difficulty in the labor market where information processing, based heavily on computer literacy, is the valued skill.

The 1979–80 expenditure per pupil for nonmetro school systems was $1,819. This compared with $2,229 and $2,064 per pupil for metro central and suburban school systems, respectively. The average for the Nation in 1979–80 was $2,048 per pupil.

74. RECREATION

Recreation uses are getting more emphasis on both public and private lands.

In fiscal year 1984, the National Forests furnished 228 million visitor-days (12 hours of recreation use) of recreation. People were attracted by 114,664 developed family camp and picnic units, 320 swimming developments, 1,106 boating sites, and 307 winter sports sites. If all these facilities were fully occupied at the same time, they could accommodate 1.67 million persons.

Other functions of the Forest Service also contribute to recreation. The National Forests maintain watersheds on lands which provide most of the Nation's big river water supply. It also supervises mining and other surface activities in the National Forests and protects lands against fire and erosion. These activities enhance hunting and fishing opportunities. In fiscal year 1984, the National Forests supplied 15.6 million visitor-days of fishing and 15.2 million of hunting.

Each year the Soil Conservation Service (SCS) assists thousands of landowners in applying conservation practices on the land. SCS helped landowners improve approximately 1.8 million acres of recreation and wildlife land during fiscal year 1984.

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By the end of 1984, more than 540 public recreation developments had been completed or were underway in Public Law 566 small watershed projects. This more than $525 million investment (41 percent Federal and 59 percent local) will provide more than 44 million visitor-days of recreation each year. The developments include more than 145,000 surface acres of water and facilities for swimming, fishing, boating, waterskiing, camping, hiking, and picnicking.

Under the Resource Conservation and Development program (Public Law 91-343), SCS has provided technical and financial assistance to create similar water-related recreation opportunities in dozens of small communities and rural areas throughout the United States.

75. RURAL PUBLIC SERVICES

Rural local governments face special problems in providing services for their citizens. Some of the characteristics of rural areas that affect the ways in which they provide services are the following. First, isolation—the geographic separation of rural areas from metropolitan centers—leads to low utilization rates for rural public services, inadequate response times for emergency services, and the detachment of service delivery professionals from their colleagues. Second, low population density means higher per unit costs of some services and the inability to supply specialized services (e.g., for the handicapped) because the area cannot support them for so few clients. Third, the lack of fiscal resources put many rural communities in a financial squeeze with resulting service deprivation for local residents. Fourth, the lack of human resources—an adequate supply of trained personnel—has several implications for service delivery in rural communities: Critical functions may go understaffed or scarce employees become overworked and service quality and quantity suffer as does long-range planning.

The lack of resources in rural communities and the small size of their governments makes it necessary for many to find alternatives to providing public services. Many contract with private sector firms to provide important services. For example, 36 percent of rural localities contract out legal services to for-profit firms rather than perform them themselves.

A community that wants to attract new residents and businesses may find it beneficial to cooperate with other towns and share in the cost of furnishing services it cannot afford by itself. Rural communities work together in a variety of ways. Mutual aid is one way. Such an approach is commonly used for fire and police protection. A second approach is for one community to sell a particular service to another. About 23 percent of these governments contract with another government for solid waste disposal as do about 19 percent for the operation of libraries and 18 percent for tax assessing. Still another

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method of cooperation is joint action, especially for large projects such as building and operating a hospital or an airport. Various methods of dividing costs and creating joint committees or governing boards are worked out for such projects.

Although most rural communities do not enjoy the same level of public services available to urban areas' residents, much progress has been made in improving rural services in the last twenty years. Rising incomes and increased aid from higher level governments have made it possible for more and better programs to be operated by rural governments. The management capacity of rural governments to plan and carry out these programs has also improved. For example, in the sixties and seventies a nationwide system of multicounty substate regional agencies was developed to help rural communities plan for and manage their new population growth. Still, the institutional base of rural governments is more fragile than that of urban areas, and these governments remain more vulnerable to external changes than metropolitan governments.

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VI. APPENDIX

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76. TABLES

Table 15.—U.S. agriculture's capacity to produce, 1951, 1956, 1961, 1966, and 1971–84

Year	Farms (thousands)		Farm population		Work-hours		Crops		Livestock		Overall
	Number	Change from preceding year	Thousands	Proportion of U.S. population (pct)	Total used (millions)	Output per work-hour index 1977=100	Production volume index 1977=100	Production per acre index 1977=100	Production volume index 1977=100	Production per breeding unit index 1977=100	Farm output 1977=100
1951	5,428	−220	21,890	14.2	15,222	20	60	59	73	68	63
1956	4,515	−140	18,712	11.1	12,028	28	63	64	79	73	69
1961	3,825	−138	14,803	8.1	9,400	39	70	78	86	84	76
1966	3,257	−99	11,595	5.9	6,858	53	73	83	91	91	79
1971	2,902	−47	9,425	4.6	5,741	74	86	96	100	96	92
1972	2,860	−42	9,610	4.6	5,433	78	87	99	101	100	91
1973	2,823	−37	9,472	4.5	5,321	81	92	99	99	97	93
1974	2,795	−28	9,264	4.4	5,178	79	84	88	100	96	88
1975 [1]	2,521	([2])	8,864	4.2	4,975	89	93	96	95	92	95
1976	2,497	−24	8,253	3.9	4,788	94	92	94	99	96	97
1977	2,456	−41	7,806	3.6	4,654	100	100	100	100	100	100
1978	2,436	−20	6,501	3.0	4,446	106	102	105	101	102	104
1979	2,432	−4	6,241	2.8	4,347	119	113	113	104	104	111
1980	2,433	+1	6,051	2.7	4,281	112	101	100	108	107	103
1981	2,434	+1	5,790	2.6	4,202	131	118	114	109	108	118
1982	2,401	−33	5,620	2.4	4,035	133	118	117	107	106	116
1983	2,370	−31	5,787	2.5	3,688	120	87	100	109	112	95
1984	2,328	−42	5,754	[3] 2.4	3,745	[3] 139	[3] 110	[3] 111	[3] 107	[3] 113	[3] 111

[1] New definition of farm began in 1975.
[2] Not available for 1975; change in farm definition precludes comparison with 1974 farm numbers.
[3] Estimated.

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Table 18.—Agricultural prices, farm incomes, assets, and exports, 1951, 1956, 1961, 1966, and 1971–84

Year	Parity ratio[1]		Income in agriculture[2]	Assets of proprietors[2,3]			Harvested crop acreage			
	Unadjusted (pct)	Adjusted (pct)	Farm operators' net income from farming	Total assets (billion dollars)	Total liabilities (billion dollars)	Proprietors' equities (billion dollars)	Total (million acres)	Domestic use per capita (acres)	For export (million acres)	Value of agricultural exports (million dollars)
			Aggregate (billion dollars)							
1951	107	108	15.3	170.1	14.6	155.5	344	1.73	59	3,411
1956	83	84	11.3	182.8	19.3	163.4	324	1.52	60	3,496
1961	79	83	12.0	219.3	28.5	190.9	302	1.26	67	4,946
1966	79	85	14.0	274.3	47.4	240.6	294	1.14	69	6,747
1971	71	75	15.0	351.8	59.6	292.2	305	1.17	82	7,955
1972	74	79	19.5	394.8	64.9	330.0	294	0.97	91	8,242
1973	91	94	34.4	478.6	73.3	405.2	321	1.06	96	14,964
1974	86	87	27.3	502.7	81.8	420.9	328	1.07	99	21,608
1975	76	76	25.6	576.4	91.7	484.7	336	1.09	100	21,854
1976	71	72	20.1	664.3	104.1	560.2	337	1.10	97	22,760
1977	66	68	19.8	736.6	123.0	613.6	345	1.06	112	23,974
1978	70	72	27.4	873.2	141.1	732.1	338	1.00	114	27,290
1979	71	72	32.9	1,015.3	166.1	849.3	348	.99	125	31,975
1980	65	65	20.4	1,108.3	182.3	926.0	352	.94	137	40,481
1981	61	62	30.4	1,111.1	202.1	909.0	366	1.03	129	43,780
1982	57	58	25.2	1,082.0	217.2	864.8	362	1.07	113	39,095
1983	56	57	15.8	1,059.4	216.2	843.1	306	.78	124	34,769
1984	58	58	34.6	955.8	212.5	743.3	348	1.00	111	38,027

[1] Ratio of index of prices received to index of prices paid, interest, taxes, and wage rates—1910–14=100.
[2] Numbers based on new farm definition beginning in 1975.
[3] January 1 numbers, including farm households.

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Table 17.—Leading States and commodities for cash receipts, including net Commodity Credit Corporation Loans, 1984

[In millions of dollars]

Commodity	United States		Leading 10 States by rank and value of cash receipts									
	Rank	Value	1	2	3	4	5	6	7	8	9	10
All commodities		141,835	Calif 14,185	Tex 9,683	Iowa 9,312	Nebr 7,082	Ill 6,738	Minn 6,242	Kans 5,947	Wis 5,136	Fla 4,587	NC 4,125
All livestock		72,739	Tex 5,901	Iowa 5,013	Nebr 4,523	Calif 4,471	Wis 4,073	Kans 3,620	Minn 3,338	Pa 2,242	Colo 2,204	Ill 2,182
All crops		69,096	Calif 9,761	Ill 4,556	Iowa 4,300	Tex 3,782	Fla 3,496	Minn 2,904	Nebr 2,559	Kans 2,328	NC 2,198	Ind 2,150
Cattle and calves	1	30,601	Tex 4,499	Nebr 3,666	Kans 3,082	Colo 1,859	Iowa 1,757	Calif 1,416	Okla 1,388	S Dak 1,202	Mo 913	Minn 863
Dairy products	2	17,661	Wis 3,008	Calif 1,986	NY 1,508	Pa 1,306	Minn 1,290	Mich 710	Ohio 611	Tex 548	Iowa 473	Wash 463
Soybeans	3	12,111	Iowa 2,034	Ill 2,034	Minn 1,083	Ohio 846	Ind 810	Mo 763	Ark 526	Miss 496	Nebr 444	Ga 364
Corn	4	11,617	Iowa 2,111	Ill 2,057	Nebr 1,344	Ind 985	Minn 963	Ohio 552	Wisc 445	Mich 377	Tex 374	NC 275
Hogs	5	9,691	Iowa 2,579	Ill 1,080	Ind 743	Minn 727	Nebr 635	Mo 632	NC 381	Ohio 371	Kans 303	S Dak 296
Wheat	6	8,443	Kans 1,406	N Dak 855	Tex 620	Okla 510	Wash 505	Mont 428	Colo 384	S Dak 362	Idaho 358	Nebr 341
Broilers	7	5,970	Ark 1,000	Ga 835	Ala 687	NC 603	Miss 448	Md 406	Del 339	Calif 297	Tex 295	Va 213
Greenhouse and nursery	8	4,984	Calif 1,245	Fla 750	Tex 361	PA 244	Tenn 194	NY 163	Oreg 163	Ga 158	Mich 147	NC 144
Eggs	9	4,086	Calif 409	Ga 321	Ind 291	Pa 256	NC 239	Ark 216	Tex 215	Ala 201	Ohio 185	Fla 155
Cotton	10	3,359	Calif 945	Tex 909	Miss 384	Ariz 306	La 232	Ark 143	Tenn 89	Ala 85	Ga 72	Mo 47
Tobacco	11	2,841	NC 1,054	Ky 756	Tenn 253	Va 224	SC 188	Ga 155	Ohio 38	Fla 32	Md 31	Ind 30
Hay	12	2,290	Calif 470	Tex 132	Kans 109	Wash 103	Ariz 97	Colo 91	Idaho 90	N Mex 88	Pa 83	Wis 75
Potatoes	13	1,770	Idaho 415	Wash 225	Calif 178	Maine 118	Oreg 96	Wis 89	Colo 81	Ny 65	Mich 62	N Dak 62

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			NC	Minn	Calif	Ark	Mo	Va	Ind	Wis	Pa	Iowa
Turkeys	14	1,655	286	230	178	123	104	101	75	67	65	61
			Tex	Kans	Nebr	Ark	Mo	Miss	La	Okla	S. Dak	N Mex
Sorghum grain	15	1,298	432	290	191	81	75	33	33	30	25	21
			Fla	Calif	Ariz	Tex						
Oranges	16	1,266	825	420	18	3						
			Ark	Calif	Tex	La	Miss	Mo				
Rice	17	1,223	467	262	196	185	74	36				
			Calif	Fla	Ohio	Mich	SC	NJ	Va	Ind	Pa	NY
Tomatoes	18	1,222	616	371	40	27	23	20	18	17	17	11
			Ga	Ala	NC	Tex	Va	Fla	Okla	SC	N Mex	
Peanuts	19	1,008	520	160	120	96	69	65	51	9	8	
			N Dak	Idaho	Mont	Wash	Calif	Minn	Oreg	Colo	S Dak	Wyo
Barley	20	941	220	137	134	104	82	68	44	36	33	12
			Wash	NY	Mich	Calif	Va	Pa	NC	W Va	Idaho	Ohio
Apples	21	931	373	75	62	60	54	50	42	24	23	16
			Calif	NY	Wash	Ariz	Pa	Mich	Ohio	Ark	NC	Ga
Grapes	22	846	747	34	21	18	8	8	2	2	2	1
			Calif	Minn	Idaho	N Dak	Mich	Nebr	Colo	Tex	Wyo	Mont
Sugar beets	23	782	165	152	125	84	73	54	32	31	28	19
			Fla	Hawaii	La	Tex						
Cane for sugar	24	729	332	241	135	20						
			Calif	Ariz	Fla	NY	Colo	Tex	NJ	N Mex	Mich	Wash
Lettuce	25	679	494	91	37	12	11	9	6	5	4	3

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Table 18.—Income of farmers and farm people from all sources, 1940 and 1945–84

[In billions—unless otherwise noted]

Year	Cash receipts from marketings [1]	Government payments to farmers	Gross cash receipts [1]	Other income from farming [1 2]	Farming gross before inventory adjustment [2 3]	Total gross after inventory adjustment [3]	Income from off-farm sources [2 3]	Total gross income all sources [3]	Total production expenses [3]	Net from farming before inventory [4] adjustment [3]	Net from farming after inventory adjustment [3]	Total for family personal spending and investment [2 3 5]	Number farm operators (millions) [6]
1940	$8.4	$0.7	$9.1	$2.2	$11.1	$11.3	.....	$14.8	$6.9	$4.2	$4.5	.....	6.35
1945	21.7	0.74	22.4	3.0	25.8	25.4	.....	31.4	13.1	12.8	12.3	.....	5.97
1946	24.8	0.77	25.6	4.0	29.5	29.6	.....	35.9	14.5	15.0	15.1	.....	5.93
1947	29.6	0.31	29.9	2.5	34.1	32.4	.....	39.6	17.0	17.1	15.4	.....	5.87
1948	30.2	0.26	30.5	6.0	34.7	36.5	.....	44.3	18.8	16.0	17.7	.....	5.80
1949	27.8	0.19	28.0	2.8	31.6	30.8	.....	38.7	18.0	13.8	12.8	.....	5.72
1950	28.5	0.28	28.7	4.4	32.3	33.1	.....	41.1	19.5	12.8	13.6	.....	5.65
1951	32.9	0.29	33.1	5.1	37.1	38.3	.....	46.7	22.3	14.8	15.9	.....	5.43
1952	32.5	0.27	32.8	4.9	36.8	37.8	.....	46.5	22.8	14.0	15.0	.....	5.20
1953	31.0	0.21	31.2	3.2	35.1	34.4	.....	42.6	21.5	13.6	13.0	.....	4.98
1954	29.8	0.26	30.1	4.1	33.7	34.2	.....	41.6	21.8	11.9	12.4	.....	4.80
1955	29.5	0.23	29.7	3.8	33.3	33.5	.....	41.2	22.2	11.1	11.3	.....	4.65
1956	30.4	0.55	31.0	3.0	34.4	34.0	.....	42.0	22.7	11.7	11.3	.....	4.51
1957	29.7	1.02	30.7	4.1	34.2	34.8	.....	42.8	23.7	10.5	11.1	.....	4.37
1958	33.5	1.09	34.5	4.4	38.1	39.0	.....	47.0	25.8	12.3	13.2	.....	4.23
1959	33.6	0.68	34.3	3.6	37.9	37.9	.....	46.3	27.2	10.7	10.7	.....	4.10
1960	34.0	0.70	34.7	3.9	38.2	38.6	8.5	47.1	27.4	10.8	11.2	19.7	3.96
1961	35.2	1.49	36.7	3.9	40.2	40.5	9.2	49.7	28.6	11.6	12.0	21.1	3.83
1962	36.5	1.75	38.2	4.1	41.7	42.3	9.9	52.2	30.3	11.4	12.1	22.0	3.69
1963	37.5	1.70	39.2	4.2	42.7	43.4	11.0	54.4	31.6	11.1	11.8	22.9	3.57
1964	37.3	2.18	39.5	2.8	43.1	42.3	11.6	54.0	31.8	11.3	10.5	22.1	3.48
1965	39.4	2.46	41.8	4.7	45.5	46.5	12.7	59.3	33.7	11.9	12.9	25.6	3.36
1966	43.4	3.26	46.7	3.8	50.6	50.5	13.9	64.4	36.5	14.0	14.0	27.8	3.26
1967	42.8	3.08	45.9	4.6	49.9	50.5	14.5	65.0	38.2	11.7	12.3	26.8	3.16

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1968	44.2	3.46	47.6	4.2	51.7	51.8	15.5	67.3	39.5	12.2	12.3	27.8	3.07
1969	48.2	3.79	52.0	4.4	56.3	56.4	16.6	73.0	42.1	14.2	14.3	30.9	3.00
1970	50.5	3.72	54.2	4.6	58.8	58.8	17.6	76.4	44.5	14.4	14.4	32.0	2.95
1971	52.7	3.14	55.9	6.3	60.8	62.1	19.1	81.2	47.1	13.6	15.0	34.2	2.90
1972	61.1	3.96	65.1	6.1	70.3	71.2	21.3	92.5	51.7	18.6	19.5	40.8	2.86
1973	86.9	2.61	89.5	9.5	95.6	99.0	24.7	123.7	64.6	31.0	34.4	59.1	2.82
1974	92.4	0.53	92.9	5.4	99.9	98.3	28.1	126.4	71.0	28.9	27.3	55.4	2.80
1975	88.9	0.81	89.7	10.9	97.2	100.6	23.9	124.5	75.0	22.2	25.6	49.5	2.52
1976	95.4	0.73	96.1	6.8	104.4	102.9	26.7	129.6	82.7	21.7	20.1	46.8	2.50
1977 [6]	96.2	1.82	98.1	10.7	107.6	108.7	26.1	134.8	88.9	18.7	19.8	45.9	2.46
1978	112.2	3.03	115.9	11.1	126.3	128.4	29.7	158.1	101.0	25.3	27.4	57.1	2.44
1979	131.5	1.38	132.9	14.0	146.9	151.9	33.8	185.7	119.0	27.9	32.9	66.7	2.43
1980	139.8	1.29	141.1	14.5	155.5	149.8	35.1	184.9	129.4	26.1	20.4	55.5	2.43
1981	142.1	1.93	144.0	16.2	160.2	166.5	36.9	203.4	136.1	24.1	30.4	67.3	2.43
1982	142.9	3.49	146.4	16.6	163.0	162.1	37.9	200.0	136.9	26.1	25.2	69.1	2.40
1983	136.3	9.30	145.6	15.6	161.2	151.4	38.8	190.2	135.6	25.6	15.8	54.6	2.37
1984	141.8	8.43	150.2	15.9	166.2	174.1	40.0	214.1	139.5	26.7	34.6	74.6	2.33

[1] Predominantly noncash income from net change in value of farm inventories, gross value of farm products used on the farm, and a rental value for farm dwellings; also cash income from recreation, machine hire and custom work.
[2] Gross income from farming before adjustments for changes in value of farm inventory of crops and livestock. The next column does allow for an increase or decrease in value of inventories.
[3] Includes nonfarm wages, salaries, interest, dividends, rental property, unemployment compensation, social security, etc., but does not include capital gains income from off-farm sources.
[4] Includes gross income from farming after inventory adjustment plus off-farm income of farm operator families.
[5] Net income from farming after change in value of farm inventory, plus off-farm income of farm operator families.
[6] Per farm numbers based on new farm definition beginning in 1977.
[7] Revised data, 1970–82.
[8] Revised data, 1960–82.
[9] Series began with 1960.

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Table 19.—Wheat: Area, yield, supply, disappearance, and prices, 1950–84[1]

Year beginning June 1	Area (1,000 acres)		Yield per harvested acre (bu)	Supply (M bu)				Disappearance (M bu)			Prices received by farmers (dol per bu)
	Planted	Harvested		Beginning stock	Production	Imports [2]	Total	Domestic use	Exports [2]	Total	
1950	54,906	51,879	26.1	1,384	1,355	8	2,747	591	654	1,245	1.74
1951	55,707	51,571	23.9	1,502	1,232	6	2,741	604	716	1,320	1.83
1952	49,274	43,686	25.0	1,421	1,092	5	2,518	599	649	1,248	2.04
1953	53,364	45,506	25.2	1,270	1,147	4	2,421	581	846	1,427	1.85
1954	55,672	48,762	25.6	993	1,283	2	2,279	635	723	1,358	1.37
1955	57,361	49,550	26.5	921	1,316	1	2,238	725	852	1,577	1.35
1956	54,105	46,613	26.3	660	1,305	2	1,967	683	771	1,454	1.63
1957	67,264	58,353	25.8	513	1,508	1	2,021	626	765	1,391	1.39
1958	61,860	54,765	28.4	630	1,557	1	2,188	740	544	1,284	1.24
1959	53,450	47,146	30.6	904	1,443	3	2,350	784	603	1,387	1.25
1960	48,739	43,564	31.0	963	1,352	1	2,336	772	741	1,513	1.33
1961	53,822	47,685	33.9	823	1,619	1	2,442	849	610	1,459	1.34
1962	54,913	47,303	32.7	983	1,546	1	2,531	799	1,135	1,934	1.76
1963	59,254	54,148	31.6	597	1,711	3	2,311	754	1,217	1,971	3.95
1964	71,044	65,368	27.3	340	1,782	3	2,125	672	1,018	1,690	4.09
1965	74,900	69,499	30.6	435	2,127	2	2,564	726	1,173	1,898	3.55
1966	80,395	70,927	30.3	666	2,149	2	2,817	754	950	1,704	2.73
1967	75,410	66,686	30.7	1,113	2,046	2	3,161	859	1,124	1,983	2.33
1968	65,969	56,495	31.4	1,178	1,776	2	2,955	837	1,194	2,031	2.97
1969	71,424	62,454	34.2	924	2,134	2	3,060	783	1,375	2,158	3.78
1970	80,788	71,125	33.5	902	2,381	3	3,287	783	1,514	2,297	3.91
1971	88,251	81,013	34.5	999	2,785	3	3,777	847	1,771	2,618	3.65
1972	86,232	77,937	35.5	1,159	2,765	8	3,932	908	1,509	2,417	3.55
1973	76,419	61,390	39.4	1,515	2,420	4	3,939	1,116	1,429	2,545	3.54
1974	79,213	68,926	38.8	1,399	2,595	9	4,003	1,155	1,424	2,579	3.38

[1] Revised data, 1983.
[2] Imports and exports include flour and other products expressed in wheat equivalent.

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Table 20.—Corn (grain only): Area, yield, supply, disappearance, and prices, 1960–84[1]

Marketing year[2]	Area (1,000 acres)		Yield per harvested acre (bu)	Supply (M bu)				Disappearance (M bu)			Prices received by farmers (dol per bu)
	Planted for all purposes	Harvested for grain		Beginning stocks	Production	Imports[3]	Total	Domestic use	Exports[3]	Total	
1960	81,425	71,422	54.7	1,787	3,907	1	5,695	3,387	292	3,679	1.00
1961	85,919	57,634	62.4	2,016	3,598	1	5,615	3,527	435	3,962	1.10
1962	85,017	55,726	64.7	1,653	3,602	1	5,260	3,479	416	3,895	1.12
1963	88,771	59,227	67.9	1,365	4,019	1	5,385	3,348	500	3,848	1.11
1964	85,823	55,369	62.9	1,537	3,484	1	5,022	3,305	570	3,875	1.17
1965	85,171	55,392	74.1	1,147	4,103	1	5,251	3,722	687	4,409	1.16
1966	98,347	57,002	73.1	842	4,168	1	5,011	3,696	487	4,184	1.24
1967	71,156	60,694	80.1	826	4,860	1	5,687	3,685	833	4,518	1.03
1968	65,126	55,960	79.5	1,169	4,450	1	5,620	3,966	536	4,502	1.08
1969	64,264	54,574	85.9	1,118	4,687	1	5,806	4,189	612	4,801	1.16
1970	68,863	57,358	72.4	1,005	4,152	4	5,161	3,978	517	4,495	1.33
1971	74,179	64,123	88.1	667	5,646	1	6,314	4,392	796	5,187	1.08
1972	67,126	57,513	97.0	1,127	5,580	1	6,708	4,742	1,258	6,000	1.57
1973	72,253	62,143	91.3	708	5,671	1	6,380	4,653	1,243	5,896	2.55
1974	77,935	65,405	71.9	484	4,701	2	5,187	3,677	1,149	4,826	3.02
1975	78,719	67,625	86.4	361	5,841	2	6,204	4,093	1,711	5,804	2.54
1976	84,588	71,506	88.0	400	6,289	3	6,692	4,121	1,684	5,805	2.15
1977	84,328	71,614	90.8	886	6,505	3	7,394	4,334	1,948	6,282	2.02
1978	81,675	71,930	101.0	1,111	7,268	1	8,380	4,944	2,133	7,077	2.25
1979	81,394	72,400	109.5	1,304	7,928	1	9,233	5,183	2,433	7,616	2.52
1980	84,043	72,981	91.0	1,617	6,639	1	8,257	4,868	2,355	7,223	3.11
1981	84,097	74,524	108.9	1,034	8,119	1	9,154	5,013	1,967	6,980	2.50
1982	81,857	72,719	113.2	2,174	8,235	1	10,410	5,420	1,870	7,290	2.68
1983	80,217	51,483	81.1	3,120	4,175	2	7,297	4,709	1,865	6,574	3.25
1984	80,434	71,816	106.6	723	7,656	3	8,382	5,215	1,925	7,140	2.65

[1] Revised data, 1979–82.
[2] Marketing year beginning October 1.
[3] Grain and grain equivalent of corn products.

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Table 21.—Soybeans: Area, yield, supply, disappearance, and prices, 1960–84 [1]

Marketing year	Area (1,000 acres)		Yield per harvested acre (bu)	Supply (M bu)			Disappearance (M bu)			Crushed for oil (M bu)	Prices received by farmers (dol per bu)
	Planted	Harvested		Beginning stocks	Production	Total	Domestic use	Exports	Total		
1960	24,440	23,655	23.5	51.8	555.1	606.9	445.1	134.7	579.8	406.1	2.13
1961	27,787	27,003	25.1	27.1	678.6	705.7	477.9	149.4	627.4	431.4	2.28
1962	28,418	27,608	24.2	78.3	669.2	747.5	521.0	180.5	701.5	472.8	2.34
1963	29,462	28,615	24.4	46.0	699.2	745.2	490.7	187.2	677.9	436.8	2.51
1964	31,721	30,793	22.8	67.3	700.9	768.2	526.3	212.2	738.5	479.0	2.62
1965	35,227	34,449	24.5	29.7	845.6	875.3	589.1	250.6	839.7	537.5	2.54
1966	37,294	36,546	25.4	35.6	928.5	964.1	612.4	261.6	874.0	559.4	2.75
1967	40,819	39,805	24.5	90.1	976.4	1,066.6	633.7	266.6	900.2	576.4	2.49
1968	42,265	41,391	26.7	166.3	1,107.0	1,273.3	659.7	286.8	946.4	605.9	2.43
1969	42,534	41,337	27.4	326.8	1,133.1	1,460.0	797.5	432.6	1,230.1	737.3	2.35
1970	43,082	42,249	26.7	229.8	1,127.1	1,356.9	824.4	433.8	1,258.2	760.1	2.85
1971	43,476	42,705	27.5	98.8	1,176.1	1,274.9	786.1	416.8	1,202.9	720.4	3.03
1972	46,866	45,683	27.8	72.0	1,270.6	1,342.6	803.5	479.4	1,282.9	721.8	4.37
1973	56,549	55,667	27.8	59.6	1,547.5	1,607.2	897.3	539.1	1,436.4	821.3	5.68
1974	52,479	51,341	23.7	170.8	1,216.3	1,387.0	778.2	420.7	1,198.9	701.3	6.64
1975	54,590	53,617	28.9	188.2	1,548.4	1,735.5	935.5	555.1	1,490.6	865.1	4.92
1976	50,269	49,401	26.1	244.9	1,288.6	1,532.5	865.6	564.1	1,429.6	790.2	6.81
1977	58,978	57,830	30.6	102.9	1,767.3	1,864.7	1,003.2	700.5	1,703.7	926.7	5.88
1978	64,708	63,663	29.4	161.2	1,868.7	2,031.2	1,104.2	739.2	1,857.2	1,017.8	6.66
1979	71,411	70,343	32.1	176	2,261	2,437	1,204	875	2,079	1,123	6.28
1980	69,930	67,813	26.5	358	1,798	2,156	1,119	724	1,843	1,020	7.57
1981	67,543	66,163	30.1	313	1,989	2,302	1,119	929	2,048	1,030	6.04
1982	70,884	69,442	31.5	254	2,190	2,444	1,194	905	2,099	1,108	5.69
1983 [2]	63,779	62,525	26.2	345	1,636	1,981	1,062	743	1,805	983	7.81
1984 [3]	67,735	66,093	28.2	176	1,861	2,037	1,117	600	1,717	1,025	5.90

[1] Revised data, 1979–83. [2] Preliminary. [3] Estimated.

Table 22.—Cotton (all kinds): Area, yield, supply, disappearance, and prices, 1964–85

Marketing year [1]	Area (1,000 acres)		Yield per harvested acre (pounds)	Supply (1,000 bales)				Disappearance (1,000 bales)			Prices received by farmers [3] (cents per pound)
	Planted	Harvested		Beginning stocks	Production	Imports	Total	Domestic mill use [2]	Exports	Total	
1964	14,836	14,055	517	12,351	15,145	118	27,614	9,261	4,195	13,456	31.0
1965	14,152	13,613	527	14,249	14,951	118	29,318	9,596	3,035	12,631	29.3
1966	10,349	9,553	480	17,028	9,557	105	26,690	9,574	4,832	14,406	21.7
1967	9,450	7,997	447	12,344	7,443	149	19,936	9,077	4,361	13,438	26.7
1968	10,912	10,159	516	6,584	10,926	68	17,578	8,332	2,825	11,157	23.1
1969	11,882	11,058	434	6,544	9,990	52	16,586	8,114	2,878	10,992	22.0
1970	11,945	11,155	438	5,843	10,192	37	16,072	8,204	3,897	12,101	22.9
1971	12,355	11,471	438	4,203	10,477	72	14,752	8,259	3,385	11,644	28.2
1972	14,001	12,984	507	3,258	13,704	34	16,996	7,769	5,311	13,080	27.3
1973	12,480	11,970	520	4,221	12,974	48	17,243	7,472	6,123	13,595	44.6
1974	13,679	12,547	441	3,808	11,540	34	15,382	5,860	3,926	9,786	42.9
1975	9,478	8,796	453	5,708	8,302	92	14,102	7,250	3,311	10,561	51.3
1976	11,636	10,914	465	3,681	10,581	38	14,300	6,674	4,784	11,458	64.1
1977	13,680	13,275	520	2,928	14,389	5	17,322	6,483	5,484	11,967	52.3
1978	13,375	12,400	420	5,347	10,856	4	16,207	6,352	6,180	12,532	58.4
1979	13,978	12,831	547	3,958	14,629	5	18,592	6,506	9,229	15,735	62.5
1980	14,534	13,215	404	3,000	11,122	27	14,149	5,891	5,926	11,817	74.7
1981	14,330	13,841	542	2,668	15,646	26	18,340	5,264	6,567	11,831	54.3
1982	11,345	9,734	590	6,632	11,963	20	18,615	5,513	5,207	10,720	59.4
1983	7,926	7,348	508	7,937	7,771	12	15,720	5,926	6,786	12,712	[4] 66.4
1984 [4]	11,145	10,379	600	2,777	12,982	25	15,784	5,365	6,250	11,615	[5] 58.7
1985 [5]	10,739	10,364	636	4,200	13,780	14	17,994	5,192	4,000	9,192	[7]

[1] Marketing year beginning August 1.
[2] Adjusted to crop-year basis.
[3] Upland cotton, weighted season average price received by farmers.
[4] Preliminary and estimated.
[5] Forecast.
[6] Average to April 1985 with no allowance for redeemed Loans.
[7] USDA is prohibited by law from publishing price forecasts.

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Table 23.—Cattle and Calves: Inventory numbers, calf crop, disposition, production, and prices, 1960–84 [1]

Year	Inventory Jan. 1 [2] (1,000 head)	Calf crop (1,000 head)	Inshipments (1,000 head)	Marketings [3] (1,000 head)		Farm slaughter [4] (1,000 head)	Deaths (1,000 head)		Production [5] (1,000 lb)	Marketings [3] (1,000 lb)	Price per 100 pounds (dollars)	
				Cattle	Calves	Cattle and calves	Cattle	Calves			Cattle	Calves
1960	96,236	39,355	13,477	34,254	12,034	1,195	1,567	2,533	28,795,880	35,722,510	20.40	22.90
1961	97,700	40,180	14,761	35,138	11,898	1,218	1,532	2,486	29,902,448	36,821,342	20.20	23.70
1962	100,369	41,441	16,583	36,403	12,182	1,194	1,583	2,542	30,774,859	37,668,658	21.30	25.10
1963	104,448	42,268	16,182	37,863	11,918	1,213	1,560	2,480	32,776,777	40,033,776	19.90	24.00
1964	107,903	43,809	15,595	40,280	12,552	1,242	1,595	2,637	34,836,138	42,655,520	18.00	20.40
1965	109,000	43,928	17,464	43,482	12,603	1,196	1,641	2,607	34,002,808	44,623,119	19.90	22.00
1966	108,862	43,537	18,624	45,038	12,488	665	1,625	2,424	34,949,625	46,284,623	22.20	26.00
1967	108,783	43,803	18,597	44,781	12,365	622	1,533	2,512	36,122,064	46,684,824	22.30	26.30
1968	109,371	44,315	19,509	45,860	12,742	568	1,527	2,485	36,530,247	47,494,093	23.40	27.60
1969	110,015	45,177	19,942	45,559	12,598	486	1,532	2,591	37,146,953	47,194,719	26.20	31.60
1970	112,369	45,871	20,059	46,926	12,036	462	1,583	2,714	39,342,987	49,459,720	27.10	34.50
1971	114,578	46,736	22,673	49,143	12,086	456	1,634	2,808	39,434,379	50,685,799	29.00	36.40
1972	117,862	47,682	24,831	51,043	12,164	503	1,780	3,346	41,225,193	53,141,798	33.50	44.70
1973	121,539	49,194	24,133	48,389	11,652	570	2,099	4,388	44,231,455	51,022,731	42.80	56.60
1974	127,788	50,873	18,103	48,383	9,514	729	2,006	4,104	42,760,575	50,208,435	35.60	35.20
1975	132,028	50,183	20,095	54,331	12,253	750	2,396	4,596	40,878,134	54,877,016	32.30	27.20
1976	127,980	47,384	21,238	54,410	12,525	722	1,821	3,369	41,368,299	57,169,770	33.70	34.20
1977	122,810	45,931	23,241	56,342	12,722	700	2,000	4,000	40,829,023	58,426,941	34.50	36.90
1978	116,375	43,818	23,573	54,622	11,952	550	1,940	3,860	39,766,559	57,381,035	48.50	59.00
1979	110,864	42,596	22,322	48,358	10,151	430	1,900	3,700	38,803,335	51,874,758	66.10	88.70
1980	111,242	44,938	20,513	46,026	10,502	401	1,795	3,618	40,283,777	50,210,836	62.40	76.80
1981	114,351	44,666	18,914	46,647	10,383	398	1,700	3,359	41,178,209	50,896,754	58.60	64.00
1982	115,444	44,200	21,289	49,549	10,560	395	1,843	3,586	40,714,722	53,275,291	56.70	59.80
1983	115,001	43,925	19,210	48,069	10,443	410	1,877	3,617	40,301,302	51,990,001	55.50	61.70
1984	113,700	42,499	20,490	50,676	10,348	390	1,873	3,602	40,000,307	54,548,782	57.30	59.90

[1] Balance sheet estimates. Total of marketings, farm slaughter, deaths and onhand end of year equals total of births, inshipments, and onhand beginning of year. Includes Alaska and Hawaii beginning 1981.

[2] All cattle and calves.

[3] Excludes interfarm sales.

[4] Data for 1966 not comparable with previous years due to change in definition to include custom slaughtering in plants for farmers as part of the commercial meat production estimates beginning with January 1966. Combined beginning 1961.

[5] Adjustments made for inshipments and changes in inventory.

Table 24.—Hogs: inventory numbers, pig crop, disposition, production, and prices, 1980–84 [1]

Year	Inventory Dec. 1[2] (1,000 head)	Pig crop (1,000 head)	Inshipments (1,000 head)	Marketings[3] (1,000 head)	Farm slaughter[4] (1,000 head)	Deaths (1,000 head)	Production[5] (1,000 lb)	Marketings[3] (1,000 lb)	Price per 100 pounds (dollars)
1980	59,026	88,216	2,500	79,631	5,114	9,223	19,203,234	18,622,151	15.30
1981	55,560	92,713	2,293	80,326	4,639	8,984	20,166,822	18,917,418	16.60
1982	56,619	93,606	2,639	81,743	4,093	9,037	20,274,620	19,310,335	16.30
1983	57,993	94,056	2,657	86,163	3,795	7,991	20,960,460	20,273,936	14.90
1984	56,757	87,544	2,718	86,086	3,269	6,872	20,216,732	20,487,965	14.80
1985	56,106	78,941	2,364	78,127	2,678	6,089	18,252,141	18,426,743	19.60
1986	50,519	87,604	2,439	75,761	1,375	6,351	19,148,989	17,773,114	23.50
1987	57,125	91,668	2,855	85,256	1,301	6,273	20,636,444	19,948,881	19.10
1988	58,818	94,156	3,181	87,726	1,262	6,338	21,034,221	20,381,499	18.50
1989	60,829	88,676	3,092	88,074	1,134	6,343	20,600,325	20,706,223	22.20
1970	57,046	101,714	3,211	86,919	1,235	6,532	21,822,826	20,347,354	22.70
1971	67,285	97,924	3,639	96,644	1,210	6,584	22,832,335	23,147,614	17.50
1972	62,412	90,574	3,360	89,555	1,158	6,617	20,918,802	20,922,577	25.10
1973	59,017	88,123	3,902	82,419	1,095	6,914	20,154,425	19,806,900	38.40
1974	60,614	83,744	3,979	85,504	1,321	6,819	19,976,384	20,299,581	34.20
1975	54,693	71,186	3,806	73,950	1,193	5,631	16,798,843	16,980,920	46.10
1976	49,267	84,395	4,191	75,744	1,175	6,001	18,110,651	17,085,365	43.30
1977	54,934	86,162	4,258	80,917	1,145	6,754	19,124,424	18,409,468	39.40
1978	58,539	88,442	4,713	81,428	1,099	7,067	19,610,887	18,749,389	46.60
1979	60,356	102,792	5,003	92,499	1,070	7,265	22,617,129	21,485,876	41.80
1990	67,318	101,720	4,666	100,651	1,100	7,494	23,401,728	23,473,775	38.00
1991	64,462	93,853	4,147	95,966	895	6,883	21,812,966	22,258,979	43.90
1992	58,666	85,189	3,827	86,972	655	5,552	19,657,921	20,154,962	52.30
1993	54,534	93,155	3,527	89,129	517	4,875	21,195,347	20,834,899	46.80
1994	56,694	86,476	3,527	87,264	473	4,917	20,178,835	20,471,516	47.10

[1] Balance sheet estimates. Total of marketings, farm slaughter, deaths and onhand end of year equals totals of births, inshipments, and onhand beginning of year. Includes Alaska and Hawaii beginning 1961.
[2] All hogs and pigs. Beginning with 1985 number onhand is estimate as of December 1 previous year.
[3] Excludes interfarm sales.
[4] Data for 1986 not comparable with previous years due to change in definition to include custom slaughtering in plants for farmers as part of the commerical meat production estimates beginning with January.
[5] Adjustments made for inshipments and changes in inventory.

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Table 25.—Sheep and Lambs: Inventory numbers, lamb crop, disposition, production, and prices, 1960–84 [1]

Year	Inventory Jan. 1 [2] (1,000 head)	Lamb crop (1,000 head)	Inshipments (1,000 head)		Marketings [3] (1,000 head)		Farm slaughter [4] (1,000 head)		Deaths (1,000 head)		Production [5] (1,000 lb)	Marketings [3] (1,000 lb)	Price per 100 pounds (dollars)	
			Sheep	Lambs	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs			Sheep	Lambs
1960	33,170	21,012	608	5,491	3,572	19,068	119	222	2,458	2,132	1,828,014	2,083,980	5.80	17.90
1961	32,725	20,782	541	5,391	3,992	19,632	118	229	2,437	2,062	1,646,105	2,178,264	5.20	15.80
1962	30,969	19,712	636	5,196	3,788	18,783	113	218	2,430	2,007	1,490,722	2,074,148	5.63	17.80
1963	29,176	18,516	620	4,962	3,720	17,956	113	212	2,268	1,889	1,403,141	2,002,402	5.76	18.10
1964	27,116	16,994	736	4,836	3,437	16,757	107	193	2,265	1,797	1,330,507	1,880,420	6.00	19.90
1965	25,127	16,312	5,165		2,454	15,213	294		2,199	1,711	1,217,139	1,839,782	6.34	22.80
1966	24,734	15,881	4,679		2,785	14,674	268		940	1,674	1,249,097	1,851,261	6.84	23.40
1967	23,953	15,017	4,030		2,911	13,993	245		1,980	1,649	1,153,596	1,803,247	6.35	22.10
1968	22,223	14,443	4,035		2,298	13,448	237		1,789	1,580	1,166,190	1,487,480	6.58	24.40
1969	21,350	13,723	4,119		2,262	12,873	233		1,826	1,556	1,065,074	1,446,504	8.10	27.20
1970	20,423	13,485	4,032		1,983	12,840	249		1,638	1,478	1,099,385	1,435,918	7.52	26.40
1971	19,731	12,996	4,004		2,202	12,627	236		1,482	1,446	1,070,502	1,447,047	6.56	25.90
1972	18,739	12,599	3,976		2,170	12,383	224		1,417	1,480	1,004,102	1,411,461	7.26	29.10
1973	17,641	11,500	3,275		2,198	10,879	202		1,386	1,441	895,776	1,278,090	12.90	35.10
1974	16,310	10,509	2,629		2,172	9,888	217		1,248	1,409	806,755	1,177,539	11.20	37.00
1975	14,515	9,857	2,343		1,771	8,997	212		1,081	1,343	781,120	1,072,665	11.30	42.10
1976	13,311	8,888	2,466		1,445	8,071	197		983	1,202	732,765	961,760	13.20	48.90
1977	12,786	8,606	2,173		1,504	7,405	198		910	1,181	703,942	896,588	13.40	51.30
1978 [6]	12,322	8,020	2,151		1,470	6,606	174		905	1,117	696,929	856,668	21.70	62.70
1979	12,365	7,974	2,143		1,347	6,336	172		867	1,063	704,593	806,785	25.70	66.70
1980	12,609	8,257	2,216		1,395	6,743	166		894	1,026	748,343	854,830	21.30	63.60
1981	12,947	8,820	1,885		1,510	7,103	189		818	1,035	772,382	885,634	21.20	54.90
1982	12,997	8,560	2,115		2,124	7,358	195		815	1,060	785,425	1,017,918	19.50	53.10
1983	12,140	8,209	1,838		1,820	7,140	171		674	934	767,553	966,515	15.70	53.90
1984	11,487	7,773	1,848		1,805	6,994	141		793	931	692,185	941,196	16.40	60.10

[1] Balance sheet estimates. Total of marketings, farm slaughter, deaths, and onhand end of year equals total of births, inshipments, and onhand beginning of year. Includes Alaska beginning 1961; Hawaii not available.
[2] All sheep and lambs.
[3] Excludes interfarm sales.
[4] Data for 1966 not comparable with previous years due to change in definition to include custom slaughtering in plants for farmers as part of the commercial estimates beginning with January 1966.
[5] Adjustments made for inshipments and changes in inventory.
[6] Excludes inventory and supply and disposition items for Alabama, Arkansas, Delaware, Florida, Georgia, Mississippi, Rhode Island, and South Carolina, and is comparable to other supply and disposition items for 1979. Actual Jan. 1, 1979, inventory is 12,389,000 head.

Table 26.—Milk: Supply, utilization, and prices, 1960–84 [1]

Year	Annual average number of milk cows [2] (1,000 head)	Milk production per cow [3] (1,000 lb)	Supply (M lb)				Utilization (M lb)			Prices received by farmers for all milk, wholesale (dol. per cwt)	Milk feed ratio [5]
			Beginning stocks	Production	Imports	Total	Domestic disappearance	Exports and shipments [4]	Total		
1960	17,515	7,029	4,167	123,109	604	127,880	121,451	1,029	122,480	4.21	1.17
1961	17,243	7,290	5,400	125,707	760	131,867	121,032	932	121,964	4.22	1.16
1962	16,842	7,498	9,903	126,251	795	136,949	123,075	1,718	124,793	4.09	1.11
1963	16,260	7,700	12,156	125,202	915	138,273	123,092	5,493	128,585	4.10	1.06
1964	15,677	8,099	9,688	126,967	830	137,485	124,741	7,454	132,195	4.15	1.12
1965	14,953	8,305	5,290	124,180	923	130,393	123,579	2,358	125,937	4.23	1.18
1966	14,071	8,522	4,456	119,912	2,791	127,159	121,092	1,208	122,300	4.81	1.30
1967	13,415	8,851	4,859	118,732	2,908	126,499	117,423	824	118,247	5.02	1.35
1968	12,832	9,135	8,252	117,225	1,780	127,257	118,852	1,771	120,623	5.24	1.47
1969	12,307	9,434	6,634	116,108	1,621	124,363	117,699	1,419	119,118	5.49	1.54
1970	12,000	9,751	5,245	117,007	1,874	124,126	117,333	990	118,323	5.71	1.53
1971	11,839	10,015	5,803	118,566	1,346	125,715	117,585	3,026	120,611	5.87	1.49
1972	11,700	10,259	5,104	120,025	1,694	126,823	119,178	2,147	121,325	6.07	1.52
1973	11,413	10,119	5,498	115,491	3,860	125,849	119,350	1,292	120,642	7.14	1.28
1974	11,230	10,293	5,207	115,586	2,923	123,716	116,672	1,158	117,830	8.33	1.22
1975	11,139	10,360	5,866	115,398	1,689	122,953	118,063	1,046	119,109	8.75	1.31
1976	11,032	10,894	3,844	120,180	1,943	125,967	119,231	1,027	120,258	9.66	1.37
1977	10,945	11,206	5,709	122,654	1,968	130,331	120,713	992	121,705	9.71	1.39
1978	10,803	11,243	8,626	121,461	2,310	132,397	122,690	978	123,668	10.58	1.53
1979	10,734	11,492	8,729	123,350	2,305	134,384	124,765	1,020	125,785	12.03	1.55
1980	10,799	11,891	8,589	128,406	2,109	139,114	125,167	988	126,115	13.05	1.48
1981	10,898	12,183	12,959	132,770	2,329	148,058	125,994	3,686	129,680	13.76	1.44
1982	11,011	12,306	18,378	135,505	2,477	156,360	131,716	4,590	136,306	13.59	1.54
1983	11,098	12,585	20,054	139,872	2,616	162,342	136,996	2,700	139,696	13.57	1.45
1984	10,840	12,495	22,648	135,444	2,741	160,831	140,831	3,571	144,402	13.45	1.42

[1] Supply-utilization data, milk equivalent, fat solids basis.
[2] Average number on farms during the year; heifers that have not freshened excluded.
[3] Excludes milk sucked by calves.
[4] Includes sales for dollars, government-to-government sales P.L. 480, and AID programs.
[5] Pounds of 16% protein ration equal in value to 1 pound of milk.

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77. METRIC CONVERSION CHART

Measurement	To convert this	To this	Multiply by
LENGTH	inches	millimeters (mm)	25.4
	feet	centimeters (cm)	30.
	yards	meters (m)	0.91
	miles	kilometers (km)	1.61
	millimeters	inches	0.04
	centimeters	inches	0.4
	meters	yards	1.1
	kilometers	miles	0.6
WEIGHT	ounces	grams (g)	28.
	pounds	kilograms (kg)	0.45
	short tons	metric tons (t)	0.9
	grams	ounces	0.035
	kilograms	pounds	2.2
	metric tons	short ton	1.1
AREA	square inches	square centimeters (cm^2).	6.5
	square feet	square (m^2)	0.09
	square yards	square meters (m^2)	0.8
	square miles	square kilometers (km^2).	2.6
	acres	hectares (ha)	0.4
	square centimeters	square inches	0.16
	square meters	square yards	1.2
	square kilometers	square miles	0.4
	hectares	acres	2.5
VOLUME	teaspoons	milliliters (ml)	5.
	tablespoons	milliliters (ml)	15.
	fluid ounces	milliliters (ml)	30.
	cups	liters (l)	0.24
	pints	liters (l)	0.47
	quarts	liters (l)	0.95
	gallons	liters (l)	3.8
	cubic feet	cubic meters (m^3)	0.03
	cubic yards	cubic meters (m^3)	0.76
	milliliters	fluid ounces	0.03
	liters	pints	2.1
	liters	quarts	1.06
	liters	gallons	0.26
	cubic meters	cubic feet	35.
	cubic meters	cubic yards	1.3
TEMPERATURE	Fahrenheit	Celsius (°C)	0.56[1]
	Celsius	Fahrenheit	1.8[2]

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Measurement	To convert this	To this	Multiply by
FARM PRODUCTS	pounds per acre	kilograms per hectare (kg/ha)	1.14
	short tons per acre	kilograms per hectare (kg/ha)	2.25
	kg/ha	metric tons per hectare (t/ha)	0.001
	kg/ha	pounds per acre	0.89
	t/ha	short tons per acre	0.44
	t/ha	kg/ha	1000.

[1] After subtracting 32.
[2] Then add 32.

1 BUSHEL OF . . .

—wheat, soybeans, potatoes	= 60 lbs. × .45 = 27 kg.
—corn, gr. sorg., rye, flaxseed	= 56 lbs. × .45 = 25 kg.
—beets, carrots	= 50 lbs. × .45 = 23 kg.
—barley, buckwheat, peaches	= 48 lbs. × .45 = 22 kg.
—oats, cottonseed	= 32 lbs. × .45 = 14 kg.

1 METRIC TON OF . . .

—wheat, soybeans, potatoes	= 2,204.6 lbs. ÷ 60 lbs. = 36.74 bu.
—corn, gr. sorg., rye, flaxseed	= 2,204.6 lbs. ÷ 56 lbs. = 39.37 bu.
—beets, carrots	= 2,204.6 lbs. ÷ 50 lbs. = 44.09 bu.
—barley, buckwheat, peaches	= 2,204.6 lbs. ÷ 48 lbs. = 45.93 bu.
—oats, cottonseed	= 2,204.6 lbs. ÷ 32 lbs. = 68.89 bu.

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78. GLOSSARY

ACREAGE ALLOTMENT. The individual farm's share, based on its previous production of the national acreage needed to produce sufficient supplies of a particular crop. Allotments apply only to tobacco.

ACREAGE CONSERVATION RESERVE. See **SET ASIDE.**

ADJUSTED BASE PERIOD PRICE. The average price received by farmers in the most recent 10 years, divided by the index (1910–14 = 100) of average prices received by farmers for all farm products in the same 10 years. Used in parity calculations.

AGRIBUSINESS. Producers and manufacturers of agricultural goods and services, such as fertilizer and farm equipment makers, food and fiber processors, wholesalers, transporters, and retail food and fiber outlets.

ANIMAL UNIT. A standard measure based on grain or high-protein meal requirements used to combine various classes of livestock with size, weight, age, and use.

AQUACULTURE. The propagation and rearing of aquatic species in a controlled or selected environment.

ATTAINABLE YIELD. Yields expected through the use of known technology and cultural practices. See **YIELD, ECONOMIC MAXIMUM.**

BASE PERIOD PRICE. The average price for an item in a specified time period used as a base for an index—such as 1910–14, 1957–59, 1967, 1977.

BASIC COMMODITIES. Six agricultural crops (corn, cotton, peanuts, rice, tobacco, and wheat) declared by legislation as requiring price support.

BREEDING UNIT INDEX. A measure of a breeding herd, including the total number of female animals capable of giving birth, weighted by the production per head, in a base period.

CARRYOVER. The volume of a farm crop not used at the end of a marketing year and carried over into the next year. Marketing years generally start at the beginning of the new harvest for a commodity and extend to the same date in the following year. Livestock and poultry production is ongoing.

CASEIN. The major portion of milk protein. It is manufactured from skim milk and is usually marketed in dry form. Food grade casein is used in processed foods and industrial grade casein is used in making glue, paint, and plastics.

CASH GRAIN FARM. A farm on which corn, grain sorghum, wheat, other small grains, soybeans, or field beans and peas account for at least 50 percent of the value of crops sold.

CENSUS OF AGRICULTURE. A count taken by the Bureau of Census every 5 years of the number of farms; land in farms; crop acreage and production; livestock numbers and production; farm spending; farm facilities and equipment; farm tenure; value of farm products sold; farm size; type of farm; and so forth. Data are obtained for States and counties.

CLIMATE. The sum total of all atmospheric or meteorological influences—principally temperature, moisture, wind, and evaporation—which combine to characterize a region and give it individuality by influencing the nature of its soils, vegetation, and land use.

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CONSERVATION, SOIL. A combination of land use and practices to protect and improve soil productivity; and to prevent soil deterioration from erosion, exhaustion of plant nutrients, accumulation of toxic salts, excessive compaction or other adverse effects. See **LAND CAPABILITY** and **SOIL.**

CONSERVATION TILLAGE. Any of several farming methods that provide for seed germination, plant growth, and weed control yet maintain effective ground cover throughout the year and disturb the soil as little as possible. The aim is to reduce soil loss and energy use while maintaining crop yields and quality.

CONSERVATION USE ACREAGE. See **SET ASIDE.**

CONSUMER PRICE INDEX. General measure of retail prices (goods and services) usually bought by urban wage earners and clerical workers. Includes prices of about 400 items, including food, clothing, housing, medical care, transportation, and energy.

CONTOUR FARMING. Field operations—such as plowing, planting, cultivating, and harvesting—on the contour, or at right angles to the natural slope, to reduce soil erosion, protect soil fertility, and use water more efficiently.

CONTRACT PRODUCTION. Producing crops or livestock under an agreement to deliver specified goods and services in certain quantities and of certain quality at a specified time.

COOPERATIVE. A business owned by and operated for the benefit of those using its services. In agriculture, such an organization is owned and used by farmers mainly to handle the off-farm part of their business—buying farm supplies, marketing their products, furnishing electric and telephone service, and providing business services—at cost. Essential features are democratic member control, limited return on capital, and service at cost, with distribution of financial benefits to individuals in proportion to their use of the services the cooperative provides.

COOPERATIVE EXTENSION SERVICE. Educational programs for people outside of classrooms, carried on by the States, usually through the resources of the land-grant colleges and universities in cooperation with the U.S. Department of Agriculture. The Extension Service staff, U.S. Department of Agriculture, represents the Department in conducting cooperative Extension work.

CORN-HOG RATIO. Number of bushels of corn that is equal (in value) to 100 pounds of live hogs; that is, the price of hogs per hundredweight divided by the price of corn per bushel. Can be calculated in terms of U.S. average prices received by farmers, prices received by farmers in a given area or on the basis of central market prices rather than farm prices. This ratio has exhibited both seasonal and cyclical movements.

CORPORATION FARM. A farm that is legally incorporated; can be of any size, including family farms.

COST OF PRODUCTION. The average amount in dollars or cents per unit used in growing or raising a farm product, including all purchased inputs and sometimes including allowances for management and the use of owned land. May be expressed on a unit, a per-acre, or a per-bushel basis for all farms in an area or in the whole country.

COUNTY EXTENSION AGENT. A professional worker—jointly employed by the county, State Cooperative Extension Service, and the U.S. Department of Agriculture—to bring agricultural and homemaking information to local people and to help them meet farm, home, and community problems. Also called extension agent, farm and home advisor, agricultural agent, extension home economist, and 4-H or youth agent. See **COOPERATIVE EXTENSION SERVICE.**

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COVER CROP. A close-growing crop, grown primarily to protect and improve soil between periods of regular crops, or between trees and vines in orchards and vineyards.

CREDIT, SUPERVISED. A technique of obtaining loans in adequate amounts combined with intensive supervision provided by a management supervisor to help family farmers achieve successful commercial farm operations.

CROSS-COMPLIANCE. A government farm program term meaning that if a farmer wishes to participate in a program for one crop by meeting the qualifications for production adjustment payments and loans for that crop, the farmer must also meet the program provisions for other major program crops which the farmer grows on that farm.

CUSTOM WORK. Specific farm operations performed under contract between the farmer and the contractor. The contractor furnishes labor, equipment, and materials to perform the operation. Custom harvesting of grain, spraying and picking of fruit, and sheep shearing are examples.

DEFICIENCY PAYMENTS. Funds paid to farmers when farm prices are below the target price—arrived at by subtracting from the target price the higher of (1) the national average loan rate, or (2) the national average market price of a commodity during the first 5 months of the marketing year (calendar year price for upland cotton, and the first 8 months of the marketing year for ELS cotton). Generally, the Federal Government pays this difference to a farmer who qualifies (by meeting all farm program conditions) for that portion of the farmer's production specified in the farm program.

DIALDEHYDE STARCH. A chemical derivative of cereal grains starch used to improve the wet strength of paper products and in tanning leather.

DISK. A farm implement composed of circular plates arranged at an angle with the line of pull. Used to prepare soil for seeding. See **HARROW.**

DRYLAND FARMING. A system of producing crops in semiarid regions—usually with less than 20 inches of annual rainfall—without the use of irrigation. Frequently, in alternate years part of the land will lie fallow to conserve moisture.

ENZYMES. Substances produced by living cells that can bring about or speed up chemical reactions without undergoing change themselves.

EROSION. The loosening and movement of the solid material of the land surface by wind, moving water, ice, and landslides.

FALLOW. Cropland left idle during the growing season. It is usually tilled to control weeds and conserve moisture in the soil.

FAMILY FARM. A farm where the operator and the operator's family make most of the day-to-day management decisions, supply the equity capital, and supply a significant part of the labor needs.

FARM. Formerly, the definition of a farm was based on a combination of the "acres in the place" and the "value of farm products sold." "Place" included all land on which agricultural operations were conducted under the control of one person, partnership, or corporation. Places of 10 or more acres were counted as farms if estimated sales of agricultural products were at least $50. Places of less than 10 acres were counted as farms if sales of agricultural products for the year were at least $250. Since 1977, a farm has been defined as any place that has $1,000 or more gross sales of farm products.

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FARM OPERATOR. A person who operates a farm, either by doing or supervising the work and by making the day-to-day operating decisions.

FEDERAL LAND BANK ASSOCIATIONS. Local farmer-owned cooperatives through which farmers obtain long term (up to 40 years) loans on land. The associations are an integral part of the Farm Credit System, a lending group that supplies nearly one-third of the borrowed capital used by farmers and nearly two-thirds of the credit used by farmer cooperatives. The system's lending institutions include: Federal Land Banks for loans on land; Production Credit Associations for short term and intermediate operating loans; and the Banks for Cooperatives for loans to cooperatives.

FEED GRAIN. Any of several grains and most commonly used for livestock or poultry feed, such as corn, sorghum, oats, and barley.

FERTILITY, SOIL. The quality that enables a soil to provide plant nutrients in the proper amounts and in the proper balance for the growth of specified plants, when other factors such as light, temperature, and the physical condition of the soil are favorable.

FERTILIZER. Any material used to supply nutrients for plants.

FOOD, FARM-PRODUCED. Food products originating on U.S. farms. These include processed products made mainly from farm-produced ingredients, as well as eggs, milk, meats, fresh fruits and vegetables, and other products sold to consumers without substantial processing. Nonfarm foods are those not originating on farms, such as fish and imported foods.

FOOD GRAIN. Cereal seeds most commonly used for human food, chiefly wheat and rice.

FORWARD CONTRACTING. A method of selling crops before harvest by which the buyer agrees to pay the grower a specified price for all or a portion of the crop.

4-H YOUTH PROGRAMS. Organized groups of young people (ages 9-19), through which the Cooperative Extension Service, the U.S. Department of Agriculture, and State land-grant universities carry on educational work in farming and homemaking projects, career development, citizenship, leadership, and other youth development activities. The H's stand for head, hand, heart, and health. See **COOPERATIVE EXTENSION SERVICE.**

FUNGICIDE. Any substance used to kill fungi, which are forms of plant life, often undesirable, that lack chlorophyll and are unable to make their own food.

FUTURES CONTRACT. An agreement between one who sells and agrees to deliver, and one who buys and agrees to receive a certain kind, quality, and quantity of product to be delivered during a specified delivery month at a specified price.

GREAT PLAINS. A level to gently sloping region of the United States which lies between the Rockies and approximately the 98th meridian, stretching from Canada to Mexico. The area is subject to recurring droughts and high winds. It consists of parts of the Dakotas, Montana, Nebraska, Wyoming, Kansas, Colorado, Oklahoma, Texas, and New Mexico.

GROSS FARM INCOME. That income which farm operators realize from farming. It includes cash receipts from the sale of farm products, Government payments, value of food and fuel produced and consumed on farms where grown, rental value of farm dwellings, and an allowance for change in the value of year-end inventories of crops and livestock.

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HARROW. An implement set with spikes, springs, or disks used to pulverize and smooth soil. See **DISK.**

HARVESTED ACRES. Acres actually harvested for a particular crop, usually somewhat smaller at the national level than planted acres because of abandonment brought on by weather damage or other disasters, insects, or market prices too low to cover harvesting costs.

HERBICIDE. Any substance used to destroy or inhibit plant growth; mainly for killing weeds.

HOG-CORN PRICE RATIO. See **CORN-HOG RATIO.**

INCOME SUPPORT PAYMENT. See **DEFICIENCY PAYMENTS.**

INTEGRATION. The combination (under the management of one firm) of two or more of the processes in the production and marketing of a particular product—generally the processes are capable of being operated as separate businesses. Diversification, on the other hand, is the production of two or more farm products by one firm or farmer.

INTERNATIONAL COMMODITY AGREEMENT. An undertaking by a group of countries to exchange information on market conditions. Some agreements include substantive economic provisions aimed at stabilizing world prices, such as commitments on stocks and prices.

INTERNATIONAL TRADE BARRIERS. Regulations and/or practices used by governments to restrict imports from other countries. Examples: Tariffs, embargoes, import quotas, and unnecessary sanitary restrictions.

LAND CAPABILITY. A measure of the suitability of land for use without damage. In the United States, it usually expresses the effect of physical land conditions, including climate, on the total suitability for agricultural use without damage. Arable soils are grouped according to their limitations for sustained production of the common cultivated crops without soil deterioration. Nonarable soils are grouped according to their limitations for the production of permanent vegetation and their risks of soil damage if mismanaged.

LAND-GRANT UNIVERSITIES. State colleges and universities started from Federal Government grants of land to each State to encourage further practical education in agriculture, homemaking, and the mechanical arts.

LAND-USE PLANNING. The decisionmaking process to determine the present and future uses of land. The resulting plan is the key element of a comprehensive plan describing the recommended location and intensity of development for public and private land uses such as residential, commercial, industrial, recreational, and agricultural. Implementing the plan is the applied phase.

LEGUME. A family of plants, including many valuable food and forage species, such as peas, beans, soybeans, peanuts, clovers, alfalfas, sweetclovers, lespedezas, vetches, and kudzu. They can convert nitrogen from the air to build up nitrogen in the soil. Many of the nonwoody species are used as a cover crop and are plowed under for improvement of the soil.

LIME, AGRICULTURAL. Materials, usually composed of the oxide, hydroxide, or carbonate of calcium, or of calcium and magnesium. The most common forms used in agriculture are ground limestone, hydrated lime, burned lime, marl, and oyster shells.

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LINTERS. The short fibers remaining on cottonseed after ginning. Too short for usual textile use, they are used for batting and mattress stuffing and as a source of cellulose.

LOAN RATE. The price per unit (bushel, bale, pound) at which the Government will provide loans to farmers, enabling them to hold their crops for later sale. See **NONRECOURSE LOANS.**

MARKET BASKET OF FARM FOODS. Average quantities of U.S. farm foods purchased annually per household in a given period, usually a base period. Retail cost of these foods used as a basis for computing an index of retail prices for domestically produced farm foods. Excluded are fishery products, imported foods, and meals eaten away from home.

MARKETING ORDERS AND AGREEMENTS (FEDERAL). A means (authorized by, and based on, enabling legislation) to permit agricultural producers collectively to influence the supply, demand and/or price for a particular crop or commodity in order to improve the orderly marketing of the crop or commodity. Once approved by a required number of producers—usually two-thirds—of the regulated commodity, the marketing order is binding on all handlers of the commodity in the area of regulation. A *marketing agreement* may contain more diversified provisions, but it is enforceable with respect to those producers or handlers who voluntarily enter into the agreement with the Secretary of Agriculture.

MARKETING QUOTA. That quantity of a crop that will provide adequate and normal market supplies. This quantity is translated into terms of acreage needed to grow that amount and allotted among individual farms, based on their previous production of that commodity. When marketing quotas are in effect (only after approval by two-thirds or more of the eligible producers voting in a referendum), growers who produce in excess of their farm acreage allotments are subject to marketing penalties on the "excess" production and are ineligible for Government price support loans. For certain tobaccos, a poundage limitation is applicable as well as acreage allotments, when approved by grower referendum.

MARKETING RESEARCH. Research to provide the consumer with the highest quality agricultural products that are low cost and safe through new science and technology and to stimulate development, innovation, and testing of new concepts in marketing, transportation, processing, storage, and consumer services.

MARKETING SPREAD. The difference between the retail price of a product and the farm value of the ingredients in the product. This farm-retail spread includes the charges made by marketing firms for assembling, storing, processing, transporting, and distributing the products.

MARKETING YEAR. The year beginning at harvesttime during which a crop moves to market. See **CARRYOVER.**

NATIONAL PROGRAM ACREAGE. The number of harvested acres of feed grains, wheat, cotton, and rice needed nationally to meet domestic and export use and to accomplish any desired increase or decrease in carryover levels. Program acreage for an individual farm is based on the producer's share of the national farm program acreage except when an acreage reduction program has been announced.

NATIONAL FOREST. Federal lands dedicated to the protection and management of natural resources, under the concept of multiple use, for a variety of benefits including water, forage, wildlife habitat, wood, recreation, and minerals. National Forests are administered by the Forest Service of the U.S. Department of Agriculture.

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NATIONAL GRASSLAND. Land, mainly grass and shrub cover, administered by the Forest Service as part of the National Forest System for promotion of grasslands, watersheds, grazing, wildlife, and recreation.

NATIONAL WOOL ACT. Legislation that provides price support for shorn wool at an incentive level to encourage production. The law also provides for a payment on sales of unshorn lambs.

NEMATOCIDE. Any substance used to kill parasitic worms called nematodes, abundant in many soils. Many nematodes attack and destroy plant roots.

NET FARM INCOME. The money and nonmoney income farm operators realized from farming as a return for labor, investment, and management after production expenses have been paid. Farm income is measured in two ways: Net farm income before inventory adjustment and net farm income after inventory adjustment. Net farm income before inventory adjustment does not include changes in the value of inventories such as crops and livestock at the end of the year.

NITROGEN. A chemical element essential to life and one of the primary plant nutrients. Animals get nitrogen from protein feeds, plants get it from soil, and some bacteria get it directly from air.

NONFARM INCOME. Includes all income from nonfarm sources (excludes money earned from working for other farmers) received by owner-operator families residing on a farm and by hired farm labor residing on a farm.

NONMONEY FARM INCOME. A statistical allowance used in farm income compilations to credit farmers with income for the value of farm products used on the farm (instead of being sold for cash) and the rental value of farm dwellings. It assumes farmers otherwise live rent-free on their farm business premises.

NONRECOURSE LOANS. Price support loans to farmers to enable them to hold their crops for later sale. Farmers may redeem their loans by paying them off with interest. The loans are nonrecourse because if a farmer cannot profitably sell the commodity and repay the loan when it matures, the pledged or mortgaged collateral (the commodity on which the loan was advanced) can be forfeited to the Government for settlement of the loan.

NORMAL CROP ACREAGE. The normal acreage on a farm devoted to a group of crops designated by the Secretary of Agriculture. When in effect, a farm's total planted acreage of such designated crops plus any set-aside cannot exceed the normal crop acreage if the farmer wants to participate in the program(s).

NORMAL YIELD. A term designating the average historic yield established for a particular farm or area. Can also describe average yields. Normal production would be the normal acreage planted to a commodity multiplied by the normal yield.

OFF-FARM INCOME. Off-farm income includes wages and salaries from working for other farmers, plus nonfarm income, for all operator and owner-operator families, regardless of where they live.

OILS AND FATS. Substances of plant or animal origin which are predominantly the trifatty acid esters of glycerin, commonly called "triglycerides." These include essential oils and mineral (petroleum) oils. The term "oil" refers to materials which are liquid at ordinary temperatures while fats are solid or plastic.

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OILSEED CROPS. Primarily soybeans, peanuts, cottonseed, sunflower seed, and rapeseed used for the production of edible and/or inedible oils as well as high protein meals. Lesser oil crops are flaxseed, safflower, castor beans, and sesame.

OILSEED MEAL. The protein rich residue remaining after the vegetable oil has been recovered. Oilseed meals are mainly fed to livestock and poultry. Oilseed meal (mainly soybean) may be further processed into edible vegetable-protein products.

ONE-PERSON BALING. Use of field pickup hay balers, with self-tying attachments and bale ejectors, that allow one person to harvest hay crops.

PARITY PRICE. Price per bushel (or pound or bale) that would be necessary for a bushel today to buy the same quantity of goods (from a standard list) that a bushel would have bought in the 1910–14 base period at the prices then prevailing. Oversimplified, it would be the price per bushel of wheat that farmers would need today in order to buy a suit of clothes with the same number of bushels that it took in 1910–14.

PARITY RATIO. A measure of the relative purchasing power of farm products. The ratio between the index of prices received by farmers for all farm products and the index of prices paid by farmers for commodities and services used in farm production and family living. The parity ratio measures price relationships (prices received and prices paid); it does not measure farm income (units of production per acre and per animal have increased and fewer farmers share total farm income); nor does it measure farmers' total purchasing power (individual farms are larger and total farm production is higher); nor does it measure farmers' welfare (does not reflect off-farm income, Government payments, farmers' assets or other factors).

PAYMENT LIMITATIONS. Limitations set by law on the amount of money any one person may receive in farm program payments each year under the feed grain, wheat, cotton, and rice programs.

PESTICIDE. A substance used to kill a pest. Pesticides include insecticides, fungicides, herbicides, and nematocides.

PHOSPHATE. A term commonly used to indicate a fertilizer which supplies phosphorus. A major element in fertilizers.

POTASH. A term commonly used to indicate a fertilizer which supplies potassium, an essential nutrient for plant growth. A major element in chemical fertilizers.

PRICE INDEXES. An indicator of the average price change for a group of commodities which compares prices for the same commodities in some other period, commonly called the base period. Monthly price indexes computed by the U.S. Department of Agriculture are the Index of Prices Received by Farmers and the Index of Prices Paid by Farmers for Commodities and Services, Interest, Taxes, and Farm Wage Rates, referred to as the Parity Index when expressed in the 1910–14 = 100 base.

PRICE SUPPORT LEVEL. The price for a unit of a farm commodity (bushel, pound) which the Government will support through price support loans and/or payments. Price support levels are determined by law and are set by the Secretary of Agriculture.

PRICES-PAID INDEX. An indicator of changes in the prices farmers pay for goods and services (including interest, taxes, and farm wage rates) used for producing farm products and in farm family living. Is referred to as the Parity Index when computed on a 1910–14 = 100 base. Also computes on a 1967 = 100 base.

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PRICES-RECEIVED INDEX. A measure computed on the basis of prices farmers received usually at the farm or in small local markets.

PRODUCTION CREDIT ASSOCIATIONS. Lending groups, owned by their farmer-borrowers, that provide short and intermediate term loans for up to 10 years. Loans to commercial fishermen operating on either the open seas or controlled waters can be extended for up to 15 years. The associations are an integral part of the Farm Credit System.

PRODUCTION EXPENSES. Total cash outlays for production. Capital expenses are figured on annual depreciation rather than on yearly cash outlays for capital items.

PRODUCTIVE CAPACITY. The amount which could be produced within the next season if all the resources currently available were fully employed using the best available technology. Productive capacity will increase whenever the available resources increase or the production of those resources increases. It describes the possibilities at one point in time, but is not fixed for all time. As real prices and profitability rise, the resources committed to agriculture and the adoption of new technology also rise.

PRODUCTIVITY. The relationship between the quantity of inputs (land, labor, tractors, feed, etc.) employed and the quantity of outputs produced. An increase in productivity means that more outputs can be produced from the same inputs or that the same outputs are produced with fewer inputs. Both single-factor and multi-factor indexes are used to measure productivity. Single-factor measures examine the output per unit of one input at the same time other inputs may be changing. Multi-factor productivity indexes consider all productive resources as a whole, netting out the effects of substitution among inputs. Crop yield per acre, output per work-hour, and livestock production per breeding animal are all single-factor productivity indicators. The "Total Farm Output per Unit of Input" index is a multi-factor measure.

PROTEIN. A combination of amino acids containing the chemical elements carbon, hydrogen, oxygen, nitrogen, and sometimes sulphur; an essential constituent for all living things.

PUBLIC LAW 480. A law passed by the Congress in 1954, often referred to as "P.L. 480" or the "Food for Peace" program. Primary purposes are to use U.S. agricultural abundance to combat hunger and encourage economic development in the developing countries and to expand foreign markets for U.S. agricultural products, as well as support the foreign policy of the United States. The program makes U.S. agricultural commodities available at low interest, long term credit under title I of the Act, and as donations for emergency or other relief under title II. Under title I, the recipient country agrees to undertake development projects such as efforts to improve food production or distribution.

PULPWOOD. Wood used in the manufacture of paper, fiberboard, and so on.

RANCH. An expression used mostly in the western United States to describe a tract of land, including land and facilities, used for the production of livestock. Accepted western usage generally refers to the headquarters facilities, pastures, and other land as the ranch, as distinguished from range. Loosely defined, a ranch also may be a small western farm, such as a fruit ranch or a chicken ranch.

RANGELAND. Land that primarily produces native forage suitable for grazing by livestock or wildlife. Also, forest land that is producing forage. Usually refers to relatively extensive areas of land suitable for grazing but not suitable for cultivation—especially in arid, semiarid, or forested regions.

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RECLAMATION. The process of reconverting disturbed lands, such as surface-mined lands, to their former uses or other productive uses.

RENEWABLE NATURAL RESOURCES. Resources such as forests, rangeland, soil and water that can be restored and improved to produce the food, fiber, and other things humans need on a sustained basis.

RESOURCES. The available means for production. Land, labor, and capital are the basic means of production on farms.

ROTATION, CROP. The growing of different crops, in recurring succession, on the same land.

ROUGHAGE. Feed such as hay and silage, with high fiber content and low total digestible nutrients.

SECTION 32. A section of Public Law 320 (approved August 24, 1935) which authorizes use of customs receipts funds to encourage increased consumption of agricultural commodities by means of purchase, export, and diversion programs.

SET ASIDE. The acreage a farmer must devote to soil conserving uses (such as grasses, legumes, and small grains that are not allowed to mature) in order to be eligible for government farm program benefits. Also called **ACREAGE CONSERVATION RESERVE** and **CONSERVATION USE ACREAGE.**

SHARECROPPER. A tenant who shares crops, livestock, or livestock products with the landowner, who, in turn, often extends credit to and closely supervises the tenant. The sharecropper generally supplies only labor.

SILAGE. A crop that has been preserved in moist, succulent condition by partial fermentation in a tight container (silo) above or below the ground. The chief crops stored in this way are corn, sorghum, and various legumes and grasses. The main use of silage is in cattle feeding.

SOIL. A dynamic natural body on the surface of the earth composed of mineral and organic materials and living forms in which plants grow. In the United States about 70,000 kinds of soil are recognized in the nationwide system of classification. Each has a unique set of characteristics and a unique potential for use.

A SOIL SERIES is a group of soils having horizons similar in characteristics and arrangement in the soil profile, except for the texture of the surface portion. They are given proper names from place names within the areas where they occur. Thus, Norfolk, Miami, and Houston are names of well-known soil series.

A SOIL TYPE (obsolete) is a subdivision of a soil series based on the texture of the surface soil, such as Miami silt loam.

A PHASE is a subdivision of a soil series, or higher unit of soil classification, based on characteristics that affect use and management of the soil but which do not vary sufficiently to differentiate it as a separate series. Thus, Miami silt loam, undulating, and Miami loam, sloping, are phases of the Miami series. Other phases may indicate stoniness, depth of rock, etc.

SOIL CONSERVATION DISTRICT. A legal subdivision of State government, with a locally elected governing body, responsible for developing and carrying out a program of soil and water conservation within a geographic boundary usually coinciding with county lines. The nearly 3,000 districts have varying names—soil conservation, soil and water conservation, natural resources, resource conservation, resources, natural

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resource or conservation districts. They help individual landowners, local groups, and others find help in natural resource management from USDA and many other agencies at all levels—and help those agencies design and carry out conservation programs.

SORGHUM, GRAIN. A cereal grass used mainly for feed grain or silage. Often grown in corn and wheat areas.

STANDARD METROPOLITAN STATISTICAL AREA (SMSA). A county or group of contiguous counties which contain at least one city of 50,000 inhabitants or more, or twin cities with a combined population of at least 50,000. In addition, contiguous counties are included in an SMSA if according to certain criteria they are socially and economically integrated with the central city.

STARCH. A complex carbohydrate found in most plant seeds, bulbs, and tubers.

STRIPCROPPING. Growing crops in a systematic arrangement of strips or bands to serve as vegetative barriers to wind and water erosion. See **CONTOUR FARMING.**

STUBBLE MULCH. A protective cover provided by leaving plant residues of any previous crop as a mulch on the soil surface when preparing for the following crop.

SUBSISTENCE FARM. A low-income farm where the emphasis is on production for use of the operator and the operator's family rather than for sale.

SYNTHETICS. Artificially produced products that may be similar to natural products.

TALL OIL. A byproduct from the manufacture of chemical wood pulp. Used in making soaps and for various industrial products.

TARGET PRICES. A minimum level of prices determined by law to provide an economic safety net. Sometimes called the "guaranteed price level." The target price becomes the price support level at which the Government will bolster farm income by making price support payments to qualifying farmers when national average market prices fall below the target. See **DEFICIENCY PAYMENTS.**

TECHNOLOGY. Applied science.

TRACE ELEMENT. A chemical substance used in minute amounts by organisms and held essential to their physiology (magnesium, iron, copper, etc.).

UNIT COST. The average amount it takes in dollars or cents to produce a single item. The total cost divided by the number of items produced.

UPLAND COTTON. A fiber plant—Goesypium Hirsutum—developed in the United States from stock native to Mexico and Central America. Includes all cotton grown in the continental United States except American Pima cotton. Staple length of upland cotton ranges from ¾ inch to 1¼ inches.

URBAN AND BUILT-UP AREAS. Cities; villages; and other areas of more than 10 acres used as industrial sites, railroad yards, cemeteries, airports, golf courses, shooting ranges, institutional and public administration sites, and similar areas.

WATERSHED. The total land area, regardless of size, above a given point on a waterway that contributes runoff water to the flow at that point. A major subdivision of a drainage basin. On the basis of this concept, the United States is generally divided into 18 major drainage areas, 160 principal river drainage basins, containing some 12,700 smaller watersheds.

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WATERWAY. A natural or artificially constructed course for the concentrated flow of water.

WHOLESALE PRICE INDEX. Measure of average changes in prices of commodities sold in primary U.S. markets. "Wholesale" refers to sales in large quantities by producers, not to prices received by wholesalers, jobbers, or distributors. In agriculture, it is the average price received by farmers for their farm commodities at the first point of sale when the commodity leaves the farm.

YIELD, ECONOMIC MAXIMUM. The most that can be produced on full efficient application of technology presently known by all farmers. Assumes there are no limitations on management, materials, equipment, capital, and experience.

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79. SELECTED REFERENCES

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Prices of periodicals listed as being available through "Subscription Only" can be obtained by writing or calling the Superintendent of Documents. Do not send request or payment to the Department of Agriculture, except for those publications otherwise noted. Send written order and remittance to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Remittances can be made by money order, or personal check; GPO also now accepts MasterCard and Visa credit cards at all of its bookstores, on mail orders sent to the Superintendent of Documents (Washington, D.C. 20402), and on phone orders placed by dialing area code 202/783–3238. Currency is sent at sender's risk. Foreign currency and postage stamps are not acceptable. Remittances from foreign countries should be made by international money order payable to Superintendent of Documents, or a draft on an American or Canadian bank. UNESCO Coupons are also acceptable from foreign countries.

CROP REPORTING BOARD REPORTS

The Crop Reporting Board of USDA's Statistical Reporting Service estimates production, stocks, inventories, disposition, utilization, and prices of agricultural commodities. Publications issued by the Crop Reporting Board and its 44 State Statistical Offices are for sale. Information about ordering publications is available from the Crop Reporting Board, USDA, 5829–S, Washington, D.C. 20250, phone 202/447–4020.

ECONOMIC RESEARCH SERVICE REPORTS

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OUTLOOK AND SITUATION reports analyze supply, demand, use, trade, and prices of major crops, livestock, and dairy and poultry products in text, tables, and charts.

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The **AGRICULTURAL OUTLOOK** report pools USDA's latest analyses of commodity supplies and demand, world agricultural trade, food marketing, farm inputs, agricultural policy, transportation and storage, and related developments, and provides USDA's official estimates of farm income and food prices. Special articles range from international trade policies to U.S. land use and availability. Published 11 times a year and averaging 48 pages, including 6 pages of charts and 20 pages of statistical tables, at an annual subscription rate of $36.00 domestic and $45.00 foreign.

FOREIGN AGRICULTURAL TRADE OF THE UNITED STATES is a bimonthly statistical report on farm exports and imports. Each issue of about 90 pages contains short feature articles that highlight current developments in farm trade, international prices, food aid, and similar topics. Subscribers also receive two annual supplements containing trade data for the fiscal year and calendar year. Subscription price is $26.00 domestic and $32.50 foreign.

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FARMLINE, published 11 times a year, provides broad coverage of major ERS research and analysis, with emphasis on how current agricultural economic developments affect American farmers,

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The **REPORTS** catalogue provides descriptions and prices of all current ERS publications, including monographs. To be placed on its free mailing list, write to EMS Information, Room 237, 1301 New York Ave., N.W.,, USDA, Washington, D.C. 20005–4788

NATIONAL FOOD REVIEW, a quarterly, covers developments, issues, and programs relating to food economics. Objective, in-depth articles detailing the latest Economic Research Service information are prepared for economists, nutritionists, educators, consumer advisors, food industry representatives, and others who need to keep posted on current developments in food economics. The annual subscription price is $8.50 domestic and $10.65 foreign.

RURAL DEVELOPMENT PERSPECTIVES, published three times a year (October, February, and June), bridges the gap between rural theory and practice. It presents the latest research results and ideas in a crisp nontechnical manner so rural practioners can put them to work. Each issue contains 8–10 articles (most no more than 4 pages long), liberally illustrated with charts and photos, 40–48 pages per issue. Subscription price is $10.00 domestic and $12.50 foreign.

WEEKLY WEATHER & CROP BULLETIN, domestic subscriptions $25 per year $33 foreign airmail. Make check payable to Department of Commerce, NOAA. This weekly publication of the Departments of Commerce and Agriculture summarizes weather and its effect on crops for the previous week. Condensed summaries give both weather and farm progress for all States. Order Weekly Weather and Crop Bulletin, Room 5844–South Bldg., USDA, Washington, D.C. 20250.

HANDBOOK OF AGRICULTURAL CHARTS provides charts covering agricultural subjects ranging from farm income to consumer costs from commodities to trade. Revised annually. Order from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

HUMAN NUTRITION INFORMATION SERVICE REPORTS

The following reports on food composition and food consumption are for sale from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

COMPOSITION OF FOODS . . . raw, processed, prepared, Agricultural Handbook No. 8 (AH–8) costs $7.00. Its revised sections are: **DAIRY AND EGG PRODUCTS** (AH 8–1) $7.00; **SPICES AND HERBS** (AH 8–2) $6.50; **BABY FOODS** (AH 8–3) $8.00; **FATS AND OILS** (AH 8–4) $7.00; **POULTRY PRODUCTS** (AH 8–5) $9.50;

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SOUPS, SAUCES AND GRAVIES (AH 8-6) $8.00; **SAUSAGES AND LUNCHEON MEATS** (AH 8-7) $6.00; **BREAKFAST CEREALS** (AH 8-8) $7.00; **FRUITS AND FRUIT JUICES** (AH 8-9) $9.00; **PORK AND PORK PRODUCTS** (AH 8-10) $7.50; **VEGETABLES AND VEGETABLE PRODUCTS** (AH 8-11) $16.00; and **NUT AND SEED PRODUCTS** (AH 8-12) $5.50.

FOODS COMMONLY EATEN BY INDIVIDUALS: Amount per day and per eating occasion (HERR-44) priced at $10.00 shows intakes of 200 commonly used foods and food groups by men, women, and children of different ages from Nationwide Food Consumption Survey (NFCS) 1977-78.

FOOD CONSUMPTION: HOUSEHOLDS IN THE UNITED STATES, SEASONS AND YEAR 1977-78, NFCS Report No. 6, and comparable reports for the **NORTHEAST** (No. 7), **NORTH CENTRAL REGION** (No. 8), **South** (No. 9), and **WEST** (No. 10) are $7.50 each. These reports provide detailed information on the quantities and money value of foods used in one week by survey households for the four seasons and for the year. The households are classified by urbanization and income. **DIETARY LEVELS: HOUSEHOLDS IN THE UNITED STATES, SPRING 1977,** NFCS Report No. 11 is $8.00. Comparable reports for the **NORTHEAST** (No. 12), **NORTH CENTRAL REGION** (No. 13), **SOUTH** (No. 14), and **WEST** (No. 15) are $7.00 each. These reports give the nutritional content of the food used by the survey households.

FOOD INTAKES: INDIVIDUALS IN 48 STATES, YEAR 1977-78, NFCS Report No. I-1 ($17.00) describes daily food intakes by individuals and the percentages of individuals reporting each food at least once during the three days surveyed. Results are presented by income, urbanization, race, and season. **NUTRIENT INTAKES: INDIVIDUALS IN 48 STATES, YEAR 1977-78,** Report No. I-2 ($13.00) gives the nutritional content of these diets. **FOOD AND NUTRIENT INTAKES: INDIVIDUALS IN FOUR REGIONS, 1977-78,** Report No. I-3 ($18.00) breaks down the data by four census regions.

FOREIGN AGRICULTURAL TRADE REPORTS

FAS COMMODITY CIRCULARS, are periodic reports on world production and trade of major commodities including grain and feed, cotton, oilseeds and products, livestock and meat, dairy and poultry, horticultural products, seeds, coffee, sugar, tea, tobacco and wood products. Send request for price list to Information Division, Program and Policy Branch, Room 4644-S, Foreign Agricultural Service, U.S. Department of Agriculture, Washington, D.C. 20250.

FOREIGN AGRICULTURE is a monthly magazine for business firms selling U.S. farm products overseas. Includes current and background information useful to export marketing, including programs to expand U.S. agricultural exports. Yearly subscription prices are $16.00

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domestic and $20.00 foreign; single copies are $2.75 domestic and $3.45 foreign. Order from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

INTERNATIONAL MARKETING PROFILES present detailed statistical information on agricultural trade activity by country or commodity. Information is included on market performance of specific agricultural products, market trends, export performance, and lists of foreign buyers. There is a charge for these reports. For an order blank and price information contact Agricultural Information and Marketing Services, Room 4645–S, Foreign Agricultural Service, USDA, Washington, D.C. 20250.

WORLD PRODUCTION AND TRADE is a weekly summary of significant developments in world agricultural production and trade, emphasizing commodity developments of importance to U.S. agriculture and a weekly table of Rotterdam prices and levies. Available free to U.S. residents only. Send request to Information Division, Room 5918–S, Media and Public Affairs Branch, Foreign Agricultural Service, U.S. Department of Agriculture, Washington, D.C. 20250.

WORLD CROP PRODUCTION is a monthly report of USDA's production estimates for wheat, rice, coarse grains, oilseeds, and cotton in major countries and selected regions of the world. Subscription fee is $18.00 domestic and $25.00 foreign. Send request to Information Division, Program and Policy Branch, Foreign Agricultural Service, U.S. Department of Agriculture, Washington, D.C. 20250.

EXPORT HANDBOOK FOR U.S. AGRICULTURAL PRODUCTS (#593, revised March 1985), provides the shipper of U.S. agricultural products with brief and well defined guidelines that include general shipping information, product selection, packaging, storage, handling, loading, and transport. Product disorders that exporters and foreign receivers of U.S. farm products should be aware of also are covered. Order from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. SupDocs #5–02206. $6.00.

ANNUAL SUMMARIES

AGRICULTURAL STATISTICS, can be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. A comprehensive statistical report containing current and historical agricultural data. Revised annually.

COMMODITY CREDIT CORPORATION CHARTS, limited quantities available; free upon request. Graphic and tabular summary of financial and program data for the preceding fiscal year. Send request to Information Division, Agricultural Stabilization and Conservation Service, U.S. Department of Agriculture, Washington, D.C. 20250.

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REPORT OF THE PRESIDENT OF THE COMMODITY CREDIT CORPORATION, free distribution limited to Members of Congress. A statutory report covering operations and financial condition of the Commodity Credit Corporation for the preceding fiscal year. Send request to Information Division, Agricultural Stabilization and Conservation Service, U.S. Department of Agriculture, Washington, D.C. 20250.

U.S. TIMBER PRODUCTION, TRADE, CONSUMPTION, AND PRICE STATISTICS, 1950–84, free. *Contents:* An annual report that presents statistical information on the production, trade, consumption, and price of timber products in the United States. Copies are available from the Forest Service, U.S. Department of Agriculture, Washington, D.C. 20250.

AGRICULTURAL MARKETING SERVICE REPORTS

AMS FOOD PURCHASES, free. Issued weekly and quarterly. The weekly report summarizes all purchases and requests for offers for those commodities purchased by the Agricultural Marketing Service (AMS) for use in school lunch and other domestic feeding programs. Information includes names of contract awardees, shipping points and destinations, quantities purchased, costs, award ranges, and shipping periods for each product. The quarterly report covers the total quantity and expenditures for each commodity purchased during the preceding quarters of the fiscal year. The reports are published by the Office of the Deputy Administrator, Commodity Services, Room 3064–S, AMS, U.S. Department of Agriculture, Washington, D.C. 20250; telephone (202) 447–5231.

FACTS ABOUT: INSTANT MARKET NEWS, AMS–572, free. Offers background information on market news and provides dial-a-market telephone numbers for instant Federal-State market news on various commodities throughout the country. A single copy is available from Information Staff, AMS, U.S. Department of Agriculture, Washington, D.C. 20250. Limited copies are in stock.

MARKET NEWS REPORTS cover current prices, supply, demand and trends for various commodities produced and marketed in different geographical locations. They are available by mail on a paid subscription basis from the respective commodity divisions of the Agricultural Marketing Service. Subscription prices are subject to change without notice. For more information, contact Information Staff, AMS, U.S. Department of Agriculture, Washington, D.C. 20250; telephone (202) 447–8998. Please state the commodities that interest you.

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PERIODICALS

AGRICULTURAL RESEARCH, published 10 times a year by the Agricultural Research Service, U.S. Department of Agriculture, reports results of research conducted by ARS scientists. Send requests for subscription information to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Send requests for single copies to the Information Division, ARS, U.S. Department of Agriculture, Rm. 316, Bldg. 005, BARC–West, Beltsville, MD 20705.

EXTENSION REVIEW, published quarterly by the Extension Service, U.S. Department of Agriculture. Describes Extension activities at Federal, State and county levels. Send subscription orders to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Yearly subscription, $14.00 domestic, $17.50 foreign. Single issues, $3.75 domestic; $4.69 foreign.

FARMER COOPERATIVES, published monthly by Agricultural Cooperative Service, U.S. Department of Agriculture, Washington, D.C. 20250. It is issued free to cooperative members and those who work directly with cooperatives; otherwise, subscriptions $18.00 per year, $22.50 foreign, upon request to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Free copies can be obtained from ACS. Carries feature articles about ACS technical assistance and research projects, discusses current cooperative issues, and reports significant actions of farmer cooperatives across the Nation.

FGIS UPDATE, free. Issued every other month. Provides timely summary of important activities of the Federal Grain Inspection Service to all who have an active interest in the grain industry. Send requests to be added to the mailing list to: Information Specialist, FGIS, U.S. Department of Agriculture, Washington, D.C. 20250.

FOOD AND NUTRITION, published by the Food and Nutrition Service (FNS) to report on the Federal food assistance programs administered by FNS in cooperation with State and local agencies. The programs include the Food Stamp Program, the Food Distribution Program, the National School Lunch and School Breakfast Programs, the Child Care Food Program, the Summer Food Service Program for Children, the Special Supplemental Food Program for Women, Infants, and Children, and the Commodity Supplemental Food Program. Free distribution is limited to cooperating agencies at the State, county, or city level; professional groups working with school programs or low-income families; persons who can further disseminate food and nutrition information, including the general press and libraries. Single copies $2.50 ($3.45 foreign); yearly subscription $11.00 ($13.75 foreign). Send check or money order to Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

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FOOD NEWS FOR CONSUMERS, published by the Food Safety and Inspection Service, USDA, and available by subscription only, $9.50 domestic ($11.90 foreign). Order from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

SOIL AND WATER CONSERVATION NEWS, published monthly by the Soil Conservation Service. Domestic subscriptions $18.00 per year, $22.50 foreign. Single copies $2.50 domestic, $3.15 foreign. Send subscription orders to Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Free distribution is limited to cooperators of the Department engaged in conservation activities, agricultural colleges and libraries, experiment stations, and similar institutions. Write to Soil Conservation Service, U.S. Department of Agriculture, P.O. Box 2890, Washington, D.C. 20013. *Contents:* Presents articles, in nontechnical language, about national, State, and local programs for conserving and developing land and water resources, and improving environmental quality.

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80. FARM INCOME CONCEPTS: THEIR MEANING AND MEASUREMENT

The Department of Agriculture has regularly published a comprehensive set of income estimates relating to agriculture since the mid 1920's.

Estimates are developed for gross farm income, farm production expenses, and finally the net return to farm operators for their farm work (including that of their families), for their management, and for the capital invested in their farms and equipment. Net return is measured as net farm income after inventory adjustment. It can also be measured on a cash basis as net cash income.

The cash receipt estimates are on a commodity-by-commodity basis using detailed SRS monthly price and marketing estimates by State. The expense estimates are by type of expense account; for the most part they are based on census of agriculture benchmarks with yearly movements derived from special surveys and SRS estimates of prices paid by farmers.

The components used in calculating *net income* from farming after inventory adjustment for 1981 are shown in the following table:

Income from Farming, 1984

[In billions of dollars]

Cash receipts from farm marketings	141.8
Government payments to farmers	8.4
Farm related income	3.0
Nonmoney income	12.9
Value of inventory change	7.9
Gross income	174.1
Farm production expenses	139.5
Net farm income after inventory adjustment	34.6

Gross farm income includes five principal components:

1. *Cash receipts from farm marketings* of farm products represent gross receipts from commercial market sales as well as loans (net of redemptions) made or guaranteed by CCC and purchases under price support programs.
2. *Government payments to farmers* are those made directly to farmers in connection with farm programs.
3. *Other farm income* from recreation and machine hire and custom work.
4. *Nonmoney income* includes farm products consumed directly in farm households and the value of housing provided by farm dwellings. Expenses associated with these products and the dwellings are included in the production expense estimates.

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5. *Value of inventory change* is the change in quantity from beginning to ending of year multiplied by the calendar year average price for each commodity.

Farm production expenses summarize the total costs incurred in farm production. They include current farm operating expenses for such items as wages paid to hired labor (in cash and in kind) and outlays for repairs of equipment and operation of the farm, as well as purchases of oil, feed, seed, and livestock. Overhead-type costs include charges for depreciation and other capital consumption, taxes on farm property, and interest on the farm mortgage debt.

Expenditures on new buildings, motor vehicles and other capital equipment are not included as a production cost. Instead, production expenses include an allowance for annual depreciation and other capital consumption.

Estimates of depreciation are based on replacement cost, which is the amount necessary at current prices to replace buildings and equipment used up during the year. Thus, after a period of substantial price increase, as has occurred since World War II, the current replacement cost basis results in larger depreciation charges than would estimates on an original cost basis.

Farm operators' net income after inventory adjustment is gross income, including inventory change, less production expenses. After adjustments for corporate officers' salaries and corporate profits, it is the figure included in the national income estimates by the U.S. Department of Commerce as farm proprietors' income. Net farm income measures the income generated from the production of a given calendar year. It is an approximation for the net value of agricultural production, regardless of whether the commodities were sold, fed, or placed in inventory during the year. Unlike net cash income, this series includes farm household benefits and expenses.

Farm wages of laborers on farms represent the income received by farm laborers living on farms from wages paid by farm operators.

Net cash income from farming measures the total income that farmers choose to receive in a given calendar year, regardless of the amount of production or the year the marketed output was produced. It approximates that income available to farmers for purchasing assets, such as land or machinery; retiring loans; and paying off all other expenditures, including operating the farm household. It is the difference between the gross cash income received (cash receipts, Government payments, and other farm income) less the *cash* expenses incurred during a calendar year.

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